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International
Marketing Information
Series



Country Market Sectoral Survey



U.S. Department of Commerce
Domestic and International Business
Administration
Bureau of International Commerce

VENEZUELA

A Survey of
U.S. Business
Opportunities

International Marketing Information Series

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Venezuela

A Survey of U.S. Business Opportunities

Country Market Sectoral Survey



U.S. Department of Commerce
Elliot L. Richardson, Secretary

Domestic and International
Business Administration

Bureau of International Commerce
Office of International Marketing

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RECENT DEVELOPMENTS IN THE ECONOMY

The combination of the phenomenal increase in foreign exchange earnings from petroleum sales and the installation of a new, development-minded Government has given the Venezuelan economy a push that is making it one of the world's most dynamic markets. Largely due to the gold rush climate engendered by the increased oil revenues, aggregate spending jumped by 17% in real terms in 1974. The chief elements in this acceleration were a 42% increase in consumer spending and a 52% increase in public sector spending. This occurred despite government efforts to resist temptation to spend its new found wealth too quickly.

Fueling these expenditures was the rate of growth in per capita national income. This spurred from an annual 7% during the 1970-72 period to 51% in 1974, reaching a level of approximately \$2,200.

The sharp rise in aggregate spending, led by manufacturing, mining, and commerce, caused an 8% real growth during 1974 in the nonpetroleum sectors of the economy. In the same year, the Gross National Product (GNP) grew by just over 5% down slightly from 1973's 5.9% rate. This relatively unimpressive performance was due to the fact that petroleum production, an inordinately heavy contributor to the GNP, has been on the decline.

Private sector investment also dropped back in 1974 from the rapid growth rates it had been achieving. From an 11% annual average increase during 1970-72 and a 22% rate in 1973, private investment growth declined to a 6% rate in 1974. Reasons for this decline were the uncertainties created by the change of government, the nationalization of the iron and petroleum industries, and foreign investors' concern over the implementation of the Andean Common Market foreign investment regulations.

The outlook for total GNP in 1975 and beyond is for about the same general level of growth, assuming that the Government continues to cut back on the production of oil. For 1975, the Ministry of Mines indicated that average production was down 21% from 1974. By comparison, the cut in 1974 was 13% of 1973's output.

In addition to the cutback in oil production is the question of the impact of the nationalization of the petroleum industry (January, 1976) on the economic situation of the country. However, early signs indicate that a real effort is being made to keep *Petroleos de Venezuela* (PETROVEN), the nationalized heir to the foreign oil companies, from becoming a political football. It is assumed that the immediate impact of the changeover on the economy will not be significant.

Counteracting the expected continued decline in petroleum production should be the much stronger growth in the nonpetroleum sectors of the economy, particularly manufacturing and agriculture. The impetus for this growth will come from the Government, as more of the development and spending plans in its National Development Plan swing into the operational phase, and from a reawakened private sector. According to recent reports, the Venezuelan Investment Fund (VIF) has now approved substantial injections of capital in a number of government projects. Described in detail in appropriate chapters of this study, these include a loan of over \$62 million for the ALCASA aluminum project, nearly \$200 million in grants and stock subscriptions for the maritime industry and \$2.5 billion earmarked for the newly nationalized oil industry.

The private sector, which was somewhat shy about making heavy investment commitments during 1974, has regained its confidence and is expected to become quite active. According to the Ministry of Development, 644 project applications were received during the period January through September 1975 with a total value of over \$1.5 billion. Around 65% of these applications are for new or expanded manufacturing facilities for machinery and equipment and intermediate goods, while the remaining 35% are for the production of consumer goods. While not all of these projects have been evaluated and approved, the Ministry did approve 151 new private industrial ventures and 269 expansion projects during the first quarter of 1975, according to a report received in December. Together, these approved projects call for an investment of over \$700 million. By comparison, there were only 130 expansion projects and 173 new ventures registered with the Ministry during all of 1974.

FOREIGN TRADE

The increased international prices for petroleum products are the key to the nation's trade picture. They reflect the Venezuelan government's attitude toward its foreign trade. The new income allows the nation to pay for its industrial development and reduce its dependence on exports of its natural resources. Lower petroleum demand resulting from the higher prices has also enabled Venezuela to conserve more of these resources for future use as a feed stock for its own industry as well as for fuel. Venezuela's merchandise exports have been dominated by petroleum crude and refined products and iron ore. Agricultural products such as coffee and cacao have been of secondary importance, and the nation has had to import food stuffs over the past several years.

VENEZUELA AT A GLANCE

Geography

Area: 352,000 square miles
Regions: 4—Andean mountains, coastal lowlands, central plains, eastern highlands

Population

Size: 12 million. Annual growth rate: 30%
Density: 34 per square mile concentrated in Central zone cities.
Language: Spanish

Labor Force

Total: 3.7 million (estimated 1975)
Monthly wage (September 1974): Blue collar \$350, white collar \$800.
Source of income: 1% extractive, 22% agriculture, 18% commerce, 17% manufacturing, 7% transportation and communication, 6% construction, and 27% in other services including government.

Economy

Gross National Product (GNP) in 1974: \$25 billion. GNP per capita \$2,168.
GNP annual growth rate 1974 (1968 dollars): 5.1%; nonpetroleum sectors growth 8.3% in 1974.
Origin of GNP (estimated 1974): agriculture 4.5%; petroleum (crude and refining) 47.3%; manufacturing 8.6%, construction 3.6%, transportation and communication 6.9%, other services (including government) 28.3%.

Foreign trade

1975 imports: \$5,250 million (estimated)
1975 exports: \$11,150 million (estimated)
U.S. exports to Venezuela in 1975: \$2,243 million.
U.S. imports: \$3,623 million.
Foreign exchange reserves (February, 1976): \$7,985 million.
Chief imports: primary materials, machinery, transport equipment.
Chief exports: petroleum crude and derivatives, iron ore, coffee, cocoa.
Inflation rate in 1974 wholesale prices: 19.9%.

Government

Federal Republic: 20 states, 1 Federal District, 74 federal dependencies and territories.
Three branch government.
Presidential term: 5 years
Next election: 1978.
Type of government: Stable democracy.
Party in power: Democratic Action (AD).
Principal opposition parties: Social Christians (COPEI), Socialist (MAS).

Investment Climate

Foreign investment welcome under conditions established under local regulations and Decision 24—the Andean Investment Code. Investment equity participation by foreigners is generally limited to minority interest, with certain areas excluded from foreign investment altogether.

To the extent the development plans of the Government are brought to successful fruition, the export pattern will change dramatically. From a level of nearly \$3.8 billion in 1972, Venezuela's total merchandise exports expanded to \$5.6 billion in 1973 and ballooned to over \$15 billion in 1974. Estimated export earnings for 1975 were around \$11.2 billion, reflecting both the higher petroleum prices and production cut backs. Petroleum exports have accounted for an average of approximately 95% of these earnings.

President Perez has expressed his belief that in the next 30 years Venezuela will become a tool exporting nation. While this may occur, it will require successful completion of the many inter-related projects to set up heavy manufacturing. Present plans call for the total output of the VENALUM aluminum project to be exported to

Japan when it becomes operational. In addition, one of the reasons given for the nationalization of the iron mines was the need to export less iron ore and more finished and semifinished metal products. It is the government's intention to use some of the new capacity being created in the steel industry to accomplish this goal.

Imports Surging

Despite the initial efforts of the government to hold the line on spending, imports have skyrocketed in response to the petroleum boom. The hefty 21% increase in imports in 1973 more than doubled in 1974 when imports soared by 46%, reaching a level of \$3.8 billion. Preliminary figures show a 1975 increase of more than 35%. During the summer of 1975 there were at one time 25 ships outside the Port of La Guaira, waiting to unload. In fact,

the sheer physical volume of imports has become a serious bottleneck to the timely achievement of many project deadlines.

By projecting the recent trends in increased imports and declining revenues from exports of petroleum products, some commentators believe Venezuela may have a trade deficit in a few years, incredible as that seems now. Venezuela's foreign exchange reserves have expanded dramatically from \$2.4 billion in 1973 to well over \$6 billion in 1974 and were an estimated \$8.9 billion in 1975. Nonetheless, there can be no doubt that Venezuela will not be able to achieve all of its goals by itself. In fact, the head of the VIF was recently quoted as saying that the Fund will seek loans on the international money markets of around \$600 million over the next few years, a relatively small sum considering present wealth. As long as the world continues to depend on petroleum, Venezuela should remain in good credit standing.

BUSINESS CLIMATE

The business climate in Venezuela is dominated by the very activist Government headed by President Carlos Andres Perez. Swept into office in a landslide election in December 1973, President Perez' Government is making heroic efforts to attack problems it perceives in Venezuelan society on a very broad front. In addition to raising the general level of industrial development of the country, Government priorities appear to be to reduce the influence of foreign business enterprises in the country, and to improve the distribution of wealth in the nation's population.

With control of both houses of Congress, President Perez asked for and received a special legislative agreement which enabled him, in effect, to rule by decree for a period of one year. The ostensible purpose of the agreement was to allow the Government to move quickly to set up conditions it felt necessary to carry out its program. And move the Government did issuing some 1,000 decrees affecting virtually every area of Venezuela's national life.

Some of the measures adopted during Perez' first 18 months in office include:

- Nationalization of both the foreign-owned iron mines and the petroleum industry, setting up state holding companies to run these industries.
- Publication of regulations for foreign investment following Decision 24 of the Andean Common Market (ANCOM). A Superintendency of Foreign Investment (SIEX) was set up to monitor, register and approve foreign investments. Under these rules of the game, basic industries such as petroleum and iron mining must be totally nationally owned and

certain "sensitive" industries such as domestic transport, electricity, radio and TV, advertising, banking, professional consultation services, commercial distribution, and Spanish language publications must be at least 80% Venezuelan-owned by May 1977.

- The overhauling of the financial system of the country with a new banking law and the creation of special funds to channel the influx of new money so as to shield the economy from its inflationary impact and to use it in productive ways.
- Creation of incentives for the establishment of local manufacturing and industrial decentralization.
- Adoption of a number of measures intended to improve the distribution of real wealth in the country. These included establishing price controls on certain products, passage of a minimum wage and a general wage increase, passage of laws creating jobs and limiting employers' ability to fire employees, and revision of the income tax laws in favor of lower income groups.
- Passage of a Consumer Protection Law.
- Adoption of the ANCOM customs code.
- Establishment of a national standards organization to monitor the quality of national manufacturing.
- Adjustment of the national planning process, overhauling government agencies and setting up National Planning Councils to advise the government on policy issues in basic industries such as petroleum, petrochemicals, steel, iron mining, general mining, and agriculture.

The rapid pace of these laws, decrees, announcements, and pronouncements left the Venezuelan business community somewhat shell-shocked and unhappy during the first year of the administration's term. The pace of change in the conditions for doing business in Venezuela now appears to have moderated. Despite its frequently voiced dissatisfaction with the heavy involvement of the Government in the economy, business appears to be increasing the pace of its own investment activities. The best indicator of this is the high number and value of the private investment projects which were registered with the Ministry of Development in 1975. A resumption of the high rates of private, nonpetroleum investment which existed in the 1970-73 period appears realistic.

The rate of new foreign investment will not increase commensurately, although foreign funds will continue to enter the country. The nationalizations, the rapid changes in the investment rules, the limitation on profit remittances to 14% under ANCOM rules, and regulations affecting the trans-

fer of technology all combine to inhibit the growth of new foreign investment. These conditions may improve as the country gains experience and determines the sectors where new foreign investment is welcome. Furthermore, Decision 24 may be liberalized in 1976.

The requirement that foreign investors divest themselves of at least 51% of their holdings has improved the conditions for Venezuelan businessmen to invest in already existing facilities, but such transfers are hampered somewhat by the absence of a strong capital market.

The sheer excitement poured into the economy from the petroleum sector is the chief stimulus to the economy, but the government has added incentives to invest—some positive and some negative. (Heavy industry will not be allowed to locate in or immediately around Caracas, for example). As described in detail in the sector on Financial Institutions, the government has set up a number of funds to supply long term, low interest capital to bolster agriculture, manufacturing, and exporting. Coupled with this funding are rebate systems for import duties on capital equipment, technical and administrative assistance and other special benefits for firms locating in areas targeted for heavy development.

THE IMPORTANT MARKETING AREAS

Venezuela's population has been shifting rapidly from rural to urban areas over the past few years. This development has created a number of problems for the country as a whole. The resources of the cities have been strained to the breaking point. Large slums called ranchos have developed in and around Caracas and Maracaibo. Agriculture has stagnated. As a result, the various levels of government have adopted a general policy of favoring almost any activity which will improve the quality of life in the rural areas or will create employment opportunities which will reduce the migration or even turn it around.

This policy is especially noticeable in the planning of the central government: virtually every state agency or department has some plan for improving its services to the rural community. In addition, the government has adopted a strategy of setting up poles of development, i.e. certain geographic regions with high potential. They receive relatively more government time, attention, and money for the establishment of social and industrial infrastructure and the development of industry than other regions. The two most important poles of development are the Guayana Region in the south and the state of Zulia in the western part of the country.

Despite these government efforts and the fact that some of the country's biggest industrial establishments are being constructed in the poles of development, the chief marketing areas in the country will continue to be the cities of Caracas and Maracaibo.

Caracas, the largest city in the country with some 2.5 million inhabitants, is located in the Central zone. It is not only the capital, but the commercial and cultural center of the country as well. Most large businesses maintain their headquarters or at least important branch offices in Caracas. Efforts by the federal government to spin off various agencies to other locations apparently have been largely unsuccessful because of the centralization of decision making powers there. Although the government has prohibited the establishment of further heavy industry in the Caracas area, and is promoting decentralization of industry away from Caracas, it will continue to be a preferred site for medium and small industries.

Also in the Central zone, within a few hours of Caracas by car or plane, are the growing industrial cities of Barquisimeto, Maracay, Puerto Cabello, Puerto la Cruz and Valencia. The latter is the home of Venezuela's automotive industry. The country's population has been shifting rapidly from rural to urban areas over the past few years and the cities in the Central zone have been most affected. Consequently the Central zone is the most promising area for marketing products requiring relatively heavy population concentrations. It is expected that a good deal of general industrial growth will occur in the cities of the Central zone, particularly in the metal working industries, as a result of their location near to both the metals industries in the south and the Caracas market.

Maracaibo lies in the Western zone of the country in the state of Zulia. With a population of just under 1 million, it is the home of the petroleum and petrochemical industries and is the second most important commercial area. The industrial growth involved with the oil industry in the Maracaibo area has overshadowed to some extent the potential of the rest of the State of Zulia. It is extremely rich in natural resources and is a pole of development itself. A very active regional development corporation, Corpozulia, is planning several important projects in the area. Coal mining and the development of a second steel production center are the most important of these. These projects also should stimulate the growth of general industries involved in metal working. This area also is noted for its agricultural potential.

The most spectacular of the poles of development is the Guayana region in southern Venezuela. It is extremely rich in natural resources such as minerals, hydroelectric potential, and timber. This re-

gion is being developed by the Guayana Development Corporation, a semiautonomous corporation headquartered in Caracas. Although not a population center on the scale of Caracas or Maracaibo, the Guayana region provides the industrial muscle for the rest of the country. It is here that the huge investments in heavy power, and steel and aluminum production will be centered. Continued rapid growth is anticipated in this region.

A Sound Marketing Approach

As indicated earlier, Venezuela has become a prime market for every important trading country in the world. Thus, despite the fact that U.S. suppliers have dominated the market historically, the firm which wishes to enter or increase its participation in the market will do well to attend to the basics of marketing: promotion of suitable products at competitive prices with adequate financing and rapid reliable parts supply and service.

With the dynamic market conditions existing in Venezuela now and for the foreseeable future, it is almost essential for most types of business to have a permanent representative or agent there. Some very successful U.S. companies maintain sales subsidiaries in the market, but given the new investment rules, to say nothing of the expenses involved, it does not appear likely that a lot of new subsidiaries of this type will be formed. Burroughs sold out their sales company in 1975, although they are remaining active in the market.

It has become increasingly common for the Government to limit invitations to bid to firms selected from a list of prequalified potential suppliers. The prequalification process may be started 6 months or more before bids are issued for a particular project. It includes a check on the firm's reputation for timeliness, quality of product, and servicing capability and performance. The prequalification is usually done in terms of the specific product, service, or job which will be bid on. Thus a firm which produces a given type of needed equipment may not be asked to bid on a turnkey project unless it indicates an ability to handle the whole job. A local representative or agent is obviously in a much better position to make the necessary contacts to develop business of this sort than a supplier trying to work at long distance. Requests for turnkey jobs are fairly common from the Government.

SELECTION OF 13 BASIC SECTORS

The Fifth Plan of the Nation has now been issued. It sets forth specific targets and goals for the years 1976-1980. The 13 sectors of the economy which will feel the chief impact of this Plan, as indicated by preliminary publicity, were surveyed by U.S. Department of Commerce and U.S. Foreign Service—Department of State market research officers in Venezuela before the Plan was published. The research results are presented in the chapters which follow.

2 Agro-Industry

Venezuela's agricultural sector is now showing signs of strong growth potential after passing through a period of stagnation during which it became increasingly dependent on imported agricultural commodities. Government planners hope to reach an 11.8% average annual rate of growth for agriculture by 1979. This will be equivalent to a projected 8% of Gross Domestic Product (GDP). Sector growth is being promoted by allocation of substantial credit at concessionary terms, guaranteed commodity support prices, and construction of rural roads, irrigation systems, and commodity storage facilities. During the 1975-79 period, public investment in these construction projects is expected to grow at the average annual rate of 19.3%, reaching a total of \$5 billion.

Purchases of agricultural equipment and machinery (including the livestock and poultry subsectors) were approximately \$63 million in 1974 with 25% growth estimated in 1975, 20% in 1976, and between 10% and 15% annually thereafter through 1979. In general, domestic production can only supply approximately 22% of the total national demand. This percentage will increase slightly in the next few years. Local manufacturers have been able to supply the market with some types of tractor drawn implements, water well pumps, and poultry and livestock feeding and watering equipment. But for the other major items, Venezuela relies strongly on imports. Corporacion Venezolana de Guyana is seriously considering setting up a tractor and diesel engine manufacturing plant to supply Venezuela's requirements and possibly those of other Andean Common Market (ANCOM) countries (Bolivia, Chile, Colombia, Ecuador, and Peru). The plant may be in production by the end of 1978.

The United States has a 60% plus share of the Venezuelan market for imported agriculture equipment. Factors such as cost competitiveness, geographic proximity, quality, technological advantages, and the extensive distribution networks which have been developed by U.S. manufacturers of agricultural equipment would be difficult for competi-

tion to duplicate. Especially strong sales opportunities exist for:

- Wheel and tracklaying tractors
- Mobile irrigation equipment and components
- Cereal and oil seed harvesters
- Silage choppers, harvesters, and conditioning equipment
- Grain silos, drying, processing and conveying equipment
- Land-clearing equipment
- Fertilizer application equipment
- Planting equipment for grains and oil seeds

SECTOR ANALYSIS

For over the past 20 years Venezuela's agricultural sector has been eclipsed by petroleum and incipient manufacturing industries. Prior to and during the 1950s, agriculture was the nation's most important economic sector. Agricultural exports such as coffee, cocoa, cattle hides, indigo, and cotton, were the principal means of earning foreign exchange.

The 1960s saw absolute production grow to record levels for many crops, peaking during 1969-1971. In the 1970s, however, the annual growth rate in agricultural production dropped from 3.7% in 1970 to 3% in 1973. A 3% annual growth rate is not sufficient to keep up with population growth. The rate decline has been reflected in the sector's contribution to GDP. In 1971 agriculture represented 7.1% of the GDP while in 1973, it contributed only 6.1%. Recently published figures indicate that 1974 results may have interrupted this downward trend, with a 6.8% GDP contribution.

Farm commodity imports have leaped 360%, going from \$126 million in 1972 to \$538 million in 1974. Principal imported foods are corn, sorghum, peanuts, black beans, and beef.

Increased petroleum wealth has contributed to the decline of the agricultural sector. Beginning in the 1950s, rising urban wage levels drew many young people away from farms. Concurrently, the

country's rapidly improving standard of living increased the cost of labor and other farm inputs. To prevent high costs from acting adversely on agricultural exports, the Government has subsidized exports of fruit and fish products.

During the following years, adverse weather and, in the view of some observers, unrealistic farm pricing policies resulted in reduction of capacity in agriculture and the decline in total output.

CROPS

According to the Venezuelan Ministry of Agriculture almost 1.6 million hectares (1 ha=2.47 acres), or approximately 1.7% of Venezuela's total land area, were under cultivation in 1973. This is an increase of nearly 2% over the total area cultivated in 1972 (see table 1 for information on crop yields, values, etc.).

The Agricultural Attache at the American Embassy in Caracas estimates that the constant dollar value of agricultural production in calendar year 1974 increased 3.3% or approximately the same as the rate of population growth. Agricultural production contributed 6.4% to GDP in 1974, up .1% from the previous year. The 1974 index for total agricultural production reached 158, (1961-65=100), the highest recorded level thus far.

Rice

Although the production of rice fell slightly to 292,000 metric tons (MT) in 1974, estimates place the 1975 yield at 300,000 MT. The principal rice growing states are Portuguesa, Guarico, Cojedes, and Barinos. (The last two are substantially less important.) Venezuela exported 35,000 MT of rice to the Caribbean countries in 1974.

Within a sample census population surveyed in 1973, the largest number of rice farms were between 50 to 99 hectares in size and yielded an average 7,775 lb. of rice per acre. However, better yields (summer harvest) were obtained on farms having smaller (20-29 hectares) and larger (100-199 hectares) cultivated areas. In the former category yields of 11,680 lb/acre were obtained while the latter produced 17,792 lb/acre. Tractor-drawn plows, harrows, seeders, fertilizer spreaders, and spraying equipment as well as self-propelled harvesters are used on a large majority of Venezuelan rice farms using irrigation.

In 1973, rice processing was centered in Portuguesa State, which then had a processing capacity of 100,321 kilograms per hour (1 kg/h=2.2046 lb/h) out of a total national capacity of 205,606 kg/h. Likewise, rice (and corn) storage capacity is located principally in Portuguesa State, with a total capacity of 288,323 metric tons (1 MT=2204.6 lb

avdp). This figure compares to a national total of 769,655 MT.

Corn

Corn production in 1974 was 570,000 MT, well below the 714,000-MT figure for 1971. Early estimates placed 1975 corn production at 630,000 MT. Venezuela continues to import a substantial amount of its corn requirements with white corn from South Africa representing the largest proportion of imports. Principal white corn producing states are Yaracuy and Portuguesa. Both states combined accounted for 43% of the 1973 total national production. Yellow corn production is centered in Bolivar State. It produced 26,751 MT, or 37% of 1973 total production.

Cojedes and Aragua States led in yields, 1,500 lb/acre and 1,388 lb/acre respectively. Corn milling is concentrated in the States of Lara and Sucre, with 20%, and 17% respectively of the 1973 total number of mills.

Beans

The estimated 1974 combined production of black beans and pinto beans (and a relatively small quantity of peas) is 42,000 MT. The early estimate of 1975 production was set at 50,000 MT. Major producing areas of both kinds of beans are Trujillo, Aragua, Lara, and Miranda States. Together they represent 54% of 1973 total national production. The best yield, however, was the 1973 figure of 511 lb/acre recorded in Monagas State.

Almost 26,000 MT of black beans and pinto beans were imported in 1972, continuing an upward trend.

Approximately 19,000 MT of peas were imported in 1972. Pea production is centered in Trujillo State, although yields on less cultivated area in Lara State were substantially higher in 1973.

Sesame Seed

Sesame seed is the leading domestic oilseed. Production was 72,000 MT in 1974. Early estimates for 1975 production are placed at 76,000 MT. Portuguesa is king in sesame farming, with 94% of the 1973 national crop. Mechanization of sesame cultivation is widespread with a 1973 census showing nearly all sesame growers using tractor-drawn harrows, seeders, and harvesters. A large number of producers also use crop sprayers and dusters. The modal area of a sesame farming operation in 1973 was between 10 and 20 hectares, although nearly half of the total material crop was produced on tracts of more than 200 hectares each.

Table 1.—Crop production, 1973

Product	Volume (MT)	% of total value ¹	Cultivated acres	% of total area cultivated ¹	Yield (lb/acre)
Cereals					
Rice	302,009	9.3	279,3566	7.1	2,384 ²
Corn	454,423	9.1	1,084,566	27.8	924
Sorghum	10,412	.2	14,025	.4	1,637
Wheat	682	.1	3,664	.1	410
Legumes					
Arveja ³	1,054	.1	6,852	.2	339
Black beans	14,728	.9	105,986	2.7	306
Pinto beans	10,411	.6	58,612	1.5	392
Quinchoncho ²	3,949	.2	21,685	.6	402
Fibers and oilseeds					
Sesame	78,497	4.8	373,212	9.5	464
Raw cotton	59,820	4.2	144,971	3.7	911
Coconut	160,080	1.0	49,724	1.3	7,100
Peanuts	6,448	.6	23,521	.6	604
Sisal	14,900	.7	28,540	.7	1,151
Roots and tubers					
Celery	15,298	.6	7,509	.2	4,493
Sweet potato	30,350	.5	6,054	.2	11,056
Mapuey ⁴	18,094	.6	5,732	.1	6,961
Batata	28,684	.8	14,799	.4	4,274
Ocumo ⁴	41,227	1.4	15,226	.4	5,709
Potato	123,638	3.2	30,586	.8	8,915
Manioc	272,050	3.2	83,653	2.1	7,172
Fruits					
Avocado	56,634	1.2	30,677	.8	4,017
Banana	902,235	7.0	113,127	2.9	17,588
Papaya	55,214	.8	7,690	.2	15,085
Mango	79,290	.4	14,900	.4	11,694
Oranges	217,114	3.3	79,492	2.0	5,911
Watermelon	58,133	.8	15,795	.4	8,117
Plantain	280,135	5.4	142,849	3.7	4,226
Pineapple	45,862	.7	6,259	.2	13,357
Other fruits	68,065	3.0	31,663	.8	4,550
Vegetables					
Garlic	1,843	.4	1,275	.1	3,188
Eggplant	2,176	.1	423	.1	11,357
Onion	35,433	1.3	4,337	.1	18,020
Cauliflower	2,147	.1	400	.1	11,828
Lettuce	14,253	.6	4,000	.1	7,858
Cucumber	7,188	.2	1,742	.1	9,100
Pepper	6,584	.2	1,638	.1	8,863
Beet	4,778	.1	887	.1	11,878
Cabbage	22,954	.6	2,157	.1	23,467
Tomato	83,971	1.9	12,624	.3	14,669
String bean	3,453	.2	1,636	.1	4,655
Carrot	14,972	.4	2,454	.1	13,459
Other vegetables	10,234	.3	9,192	.2	2,455
Coffee	65,926	11.7	673,251	17.2	216
Cocoa	19,081	2.7	173,825	4.4	242
Sugar cane	5,623,161	10.7	185,570	4.7	66,827
Tobacco	13,434	4.2	22,454	.6	1,319

1. Rounded to nearest .1%.

2. Irrigated and nonirrigated.

3. Different kinds of peas.

4. Type of edible roots.

Source: Statistics Division, Venezuelan Ministry of Agriculture and Livestock, Caracas.

Cotton

Cotton production amounted to 33,000 MT (lint basis) in 1974. Early estimates place the 1975 crop at 30,000 MT. According to Ministry of Agriculture figures, 1973's yield of 911 lb/acre (boll basis) was the best ever.

Production is concentrated in Brinas State where the production yields of 1,311 lb/acre boll basis are obtained. Guarico, Anzoategui, and Portuguesa States are other important producers. In 1973, the summer harvest (between January 1st and April 30th) represented approximately 50% more than the winter crop (May 1st-December 31st). Of a sample of cotton growers surveyed in 1973, approximately 8% used tractor-drawn plows, 19% tractor-drawn harrows, 16% tractor-powered cultivators, 2% harvesters, 26% tractor-powered seeders, and 17% tractor-drawn fertilizer spreaders. Assuming this census data is accurate, it appears numerous small-scale growers have been included in the sample because the large cotton farmers are among the most highly mechanized of all crop producers.

The modal area of cotton cultivation tracts in 1973 was between 5 and 10 hectares. The highest yields were obtained on cultivated units of between 100 and 200 hectares. The largest number of cotton gins (5) in 1973 was in Guarico State. National ginning capacity increased from 14 units with a combined 8-hour shift capacity of 363 tons in 1970 to 17 units with a capacity of 735 tons per 8-hour-shift in 1973. Imports of over 6,000 MT of ginned cotton and 27,000 MT of cottonseed oil were recorded in 1972.

Cottonseed oil production exceeded 6,000 MT in 1973, having risen steadily from 1960 production of almost 1.5 thousand MT.

Sugar

Acreage devoted to sugar cane cultivation has continued to increase slowly over the past several years. Cane yields averaged 67 short tons/acre in 1973, and 8.35 tons of refined sugar were produced per 100 tons of sugar cane. The three leading sugar producing centers are the Rio Turbio mill in Lara State, the Matilde sugar mill in Yaracuy State and the El Palmar sugar mill in Aragua State. El Palmar had the distinction of being the only mill in which 1973 refined sugar yields exceeded 10 tons per 100 tons of cane milled. El Palmar's refined sugar production also substantially exceeded the national average for the volume of refined sugar produced per unit of area of sugar cane cultivated (17,173 lb/acre versus 12,294 lb/acre).

LIVESTOCK

Cattle

The cattle production of Venezuela at the end of 1974 was nearly 9 million head, a 1% increase over 1973. Drought conditions which affected pastures slowed the national herd development in 1973 and 1974. Because of improved range management techniques and better weather conditions a slightly more than 1% growth rate was projected for the herd in 1975.

The total 1974 cattle slaughter is estimated to have been over 1.5 million head, 6% above the 1973 level. About 70% of the cattle slaughtered in 1974 was processed by commercial establishments. The rest was butchered on farms or in small municipal facilities. The 1975 slaughter was expected to be around 1.6 million head. Beef production during 1974 was an estimated 270,000 MT, an increase of 8% over the previous year. A further increase of about 7% was expected for 1975. Partially because of the incentives in the government's grading/pricing systems, beef carcass weights are tending to increase.

The Ministry of Agriculture calculates that in 1972 there were over 123,000 hectares of pasture cultivated for forage, 4.7 million hectares of improved pasture and 11.5 million hectares of natural pasture in Venezuela. The western State of Zulia, seat of the country's dairy industry, has nearly half of Venezuela's forage and improved pasture areas. Guarico, Apure, and Bolivar States have large percentages of the country's natural pastureland.

Importation of dairy and beef cattle is expected to accelerate as beef producers and dairymen take advantage of the government's credit programs which are designed to improve the quality of the herds. In 1973, a total of 1,635 bulls and 366 heifers, including 152 cows for breeding stock, were imported into Venezuela. Aside from mestizos and fighting breeds, the most commonly imported breeds in order were Brahman, Charolais, and Santa Gertrudis. Zulia State with 1.9 million head, Apure, with 1.3 million head, and Guarico with 1.0 million head, have the largest cattle populations of all Venezuelan states. Brahman were the most numerous pure-bred cattle in Venezuela in 1973.

Swine

The swine population increased from 1.6 million head in 1973 to 1.7 million in 1974. Miranda and Barinas are the principal producing states.

Increased prices to producers, as well as reduced feed prices have been the main stimulants for herd increases. Husbandry is cited as the cause for a general upward trend in swine carcass weights in

recent years. Pork production in 1974 was estimated at 52,000 MT. Production in 1975 was expected to increase as much as 13% as raisers work off "excess" animal inventories. Of the total 1.3 thousand swine imported as breeding stock during 1973, Landrace, Duroc Jersey, and Yorkshire (in order) were the favored breeds.

Sheep and Goats

The goat and sheep populations in 1974 were 1.4 million and 100,000 respectively. No significant changes are anticipated. Production of lamb and goat meat combined was estimated at 4,000 MT for 1974.

Dairy Cattle

The Venezuelan dairy herd numbered more than 1 million head in 1972. Raw milk production in 1974 was estimated at 1.06 million MT. Of this amount, 331,000 MT were pasteurized. About 55,000 MT of dry whole milk were produced as well as 7,000 MT of butter, and approximately 33,500 MT of cheese. There were 18 pasteurizing plants in Venezuela in 1973. They were concentrated in Zulia and Miranda States.

The nation's total pasteurizing capacity in 1973 was almost 2,000 liters while total powered milk producing capacity was over 11,000 kg/h. Zulia State had four of the nation's six powdered milk plants. Approximately 17,000 MT of powdered milk were imported into Venezuela in 1974, 33% less than in 1973.

Poultry

Venezuela's poultry population was estimated at nearly 25 million birds in 1973 with approximately 20 million on poultry farms of 500 or more birds. Laying hens are concentrated primarily in Marianda, Carabobo, Aragua, and Zulia States. While breeding roosters were found in large numbers in Carabobo and Yaracuy States. According to Ministry of Agriculture statistics, Arbor Acres' Vantress is the most numerous of all breeds. Of the nearly 6 million laying hens in Venezuela approximately 40% are classified as sex-link, 24% Leghorns, 13% Warren, and 9% Arbor Acres with lesser numbers of other breeds. Production of eggs in 1973 for consumption was set at 3.1 million daily and fertile egg production at nearly one-half million per day.¹ A producer association source has estimated the 1974 per capita consumption of eggs at 131, and per capita consumption of chicken at 22 lb. Miranda, Aragua, Zulia, and Carabobo were the principal producing states of eggs for consumption, while Carabobo State accounted for more than half

1. These production figures do not include production of eggs on farms having less than 500 birds. Such smaller or nonspecialized operations nevertheless contribute importantly to egg and poultry production.

of fertile egg production. Broilers numbered slightly more than 11 million in 1973, with Miranda, Zulia, and Aragua States being the major producers. Annual egg production per laying hen has gone from 209 in 1965 to 221 in 1973. In 1973, 77 million broilers and fryers, weighing 98,000 MT, were slaughtered.

Because of complaints from poultry producers that feed manufacturers were flooding the market with layer chicks, the Venezuelan Government set a maximum production level per commercial hatchery of 650,000 chicks per month for 1975. This level is expected to be increased to 700,000 per month in 1976. Industry sources are estimating broiler production to increase at an annual rate of 12% (average monthly production was about 4.6 million birds in 1973) and egg production to increase at an annual rate of 6% for the next few years.

In 1973, there were 50 poultry processing establishments in Venezuela that had a capacity of more than 200 birds per day. Twelve, with a combined daily capacity of over 100,000, were in Miranda State, while nine located in Zulia State had a combined daily capacity of 66,500. These two states accounted for nearly two-thirds of the nation's daily processing capacity of 274,690 birds.

In 1973, there were 1,022 poultry farms in Venezuela which had more than 500 birds. Total invested capital in the more than 1,000 large poultry farms (more than 500 birds) was estimated at approximately \$70 million in 1973, of which \$28 million were in birds, \$34 million in installations and facilities, and the balance in land. In 1973, Venezuela's egg incubation capacity on the 22 largest poultry farms was estimated at 155 million eggs. One estimate places the current number of commercial incubator operators at 80.

Newcastle disease vaccinations were reported to have increased from approximately 25 million in 1970 to nearly 123 million in 1973.

Fish

While estimated 1974 volume dropped 7.4%, it was still 18.9% over that of 1970 (see table 2). The total value of 1974 production was up sharply over the 1973 figure despite the decrease in volume. Canned fish production in 1974 likewise experienced a healthy increase in value despite a drop in volume (see table 3). Production data on specific types of seafood are provided in tables 4 through 6.

A complete census of fishing boats does not exist, but a 1972 survey conducted by the Communications Ministry indicates that there were 160 boats of between 100 and 500 tons engaged in fishing activities. However, recent Government reports indicate that there are some 360 shrimp trawlers currently in operation.

Table 2.—Fish production of Venezuela, 1970-74
(thousands)

Year	Fresh		Salted ¹		Total	
	Metric ton	Dollar value	Metric ton	Dollar value	Metric ton	Dollar value
1970	106.4	24,500.20	6.7	1,812.94	126.3	26,313.14
1971	120.3	28,515.23	6.5	1,878.13	139.9	30,393.36
1972	133.5	32,997.59	6.2	1,926.91	152.2	34,924.50
1973	141.0	36,727.73	7.1	2,326.73	162.3	39,054.46
1974 ²	123.5	44,694.80	8.9	3,178.86	150.2	48,873.66

1. To obtain full weight multiply salted by three.

2. Preliminary figures.

Source: Ministry of Agriculture and Livestock, Caracas.

Table 3.—Canned fish production, exports and value of exports, 1970-74

Year	Production		Exports	
	Metric tons	Percent increase	Metric tons	Thousands of U.S. dollars
1970	21,385	-5.0	531	196
1971	33,215	55.0	1,667	313
1972	35,839	7.9	3,278	239
1973	27,448	-23.4	n.a.	959
1974	21,041	-23.3	n.a.	1,571

1. Preliminary figures.

Source: Ministry of Agriculture and Livestock, Caracas.

Table 4.—Production of sardines, 1970-74
(volume and value in thousands)

Year	Metric tons	Dollar value
1970	41.4	759
1971	44.3	796
1972	45.4	964
1973	47.5	1,124
1974 ⁽¹⁾	22.8	1,363

1. Preliminary figures.

Source: Ministry of Agriculture and Livestock, Caracas.

Table 5.—Production, importation and consumption of tuna, Venezuela 1970-74
(Metric tons in live weight)

Year	Production		Apparent consumption	Population (1,000's)	Per capita consumption
	Imports	Exports			
1970	2,195	40	2,235	10,399	.22
1971	2,352	53	2,405	10,778	.22
1972	3,218	294	3,512	11,173	.31
1973	2,209	n.a.	n.a.	—	n.a.
1974	6,401	n.a.	n.a.	—	n.a.

Source: Ministry of Agriculture and Livestock, Caracas.

Table 6.—Shrimp landings and exportation, 1970-74
(in thousands of U.S. dollars)

Year	Landings		Exports	
	Metric tons	Dollar value	Metric tons	Dollar value
1970	8,667	10,401	7,043	5,498
1971	9,398	11,182	6,885	9,974
1972	7,817	11,031	6,379	12,061
1973	6,432	11,045	n.a.	11,314
1974 ⁽¹⁾	6,383	11,393	4,234	13,387

1. Preliminary figures.

Source: Ministry of Agriculture and Livestock, Caracas.

DEVELOPMENT PLANS, 1975-79

Recognizing that a viable, thriving agricultural sector is the cornerstone upon which any long term development plan must rest, the Venezuelan government at last is giving agricultural development top priority. Fortunately, the country has ample oil revenues to support this effort. The country's interior is now slated for a massive development plan. In order to carry out this program for the "interior," as the country outside of Caracas is called, the new administration of President Perez issued over 500 decrees before the end of 1974. Many of these decrees were aimed at lending increased support to the rural sector.

In May, 1975, CORDIPLAN (Oficina Central de Coordinacion y Planificacion—Venezuelan Central Planning and Coordination Office—released their first draft of the country's Fifth Five-Year Economic and Social Development Plan covering the 1975-79 period. The plan proposes to transform the agricultural sector into a "modern, efficient, and financially sound activity that will serve as a base for the economic and social development of the country." It predicts that the agricultural sector (which includes fishing and lumbering) will grow from a GNP share of 6.8% in 1974 to 8% in 1979. To accomplish this objective, an average annual sector growth rate of 11.8%, which would be unexcelled in Venezuela's history, will be required. Government investment of \$5 billion is slated for the agricultural sector under the Five-Year Plan.

Irrigation

In 1974 the Division of Water Resources of the Ministry of Public Works spent \$26.6 million for large and small scale irrigation systems covering 5,302 hectares. This increased the total irrigated area to 78,300 hectares.

The preliminary outline of the Five-Year Plan calls for the installation of small and medium-size irrigation systems for some 200,000 additional hectares.

Lake and pond excavation will be accelerated to provide farmers and ranchers a greater degree of

protection against droughts such as have occurred during the past several years. The geographic emphasis of this program will be in the States of Anzoategui, Aragua, Cojedes, Lara, Falcon, Guarico, Monagas, and Zulia. In addition recent hydrological studies prepared by the Ministry of Public Works have confirmed the feasibility of a large scale deep-well development program which would allow the rehabilitation of unutilized or underutilized lands.

Work has begun on the Guanare-Maspano flood control/irrigation project. This is intended to recuperate 1 million hectares of land in the Barinas State Districts of Obispos, Sosa, and Rojas, and the Guanare and Guanarito Districts in Portuguesa State. The project comprises the construction of four major river dams and numerous flood control levels. Such a system of levees, protecting 500,000 hectares, is now under way in Apure State.

Development of the Unare River Basin will irrigate 2 million hectares of farm and ranch land in the eastern States of Guarico (Cigarron and Pueblito Quebranda Honda) and Anzoategui (Vista Alegre, Olivo, Rio Guere, Rio Guaribe, and Las Dantas). There are several other smaller projects.

Fertilizer

Fertilizer production is to stimulate its more widespread use in counteracting the acidic character of Venezuela's soils. The National Lime Agency (Empresa Nacional de Cal) is to be created to sell agricultural lime at cost, with the government paying transportation costs to distribution points.

Roads

The Office of Rural Works Ministry of Public Works, in an effort to facilitate farm-to-market transportation links, has budgeted \$666 million for the building of 15,000 kilometers of improved and hard surface roads.

Storage Facilities

The Fifth Five-Year Plan estimates the national shortage of storage capacity for agricultural commodities at 500,000 MT. The Plan's first stage involved the construction of seven major facilities (principally horizontal) during 1975. These added 280,000 MT of new capacity, mainly for corn, rice, and sorghum. The first stage cost about \$45 million. The second stage of the program, beginning in March 1976 is expected to add 120,000 MT of capacity and is budgeted at \$24.3 million. This program is being administered by the Corporacion de Mercadeo Agricola (Agricultural Marketing Corporation), which plays a major role in the importation of not only agricultural commodities, but also

agricultural equipment and machinery for the public sector.

Financing

FCA (Fondo de Credito Agrocola)—Agricultural Credit Fund—with over \$450 million in capital was established in September 1974 to make loans to the agricultural concerns. The terms are exceptionally favorable: 3% to 7% annual interest with final repayment out as far as 20 years with a 5-year grace period.

Two major government banks—BANDAGRO (Banes de Desarrollo Agropecuario—Agricultural Development Bank) and ICA (Instituto de Credito Agropecuario—Institute for Agricultural Credit)—were given the principal responsibility of administering the fund. Slightly more than half of the fund was obligated as of June 1975. The Government is expected to replenish it when the initial funding has been disbursed.

BANDAGRO had an initial quota of Bs. 200 million (\$46.7 million) which was supplemented by an additional Bs. 210 million (\$49.1 million). BANDAGRO makes loans to medium- and large-scale farmers and ranchers, including incorporated operations. Disbursements had reached Bs. 380 million by May, 1975.

ICA, formerly known as Bank for Agriculture and Livestock or BPA, makes loans to only small farmers and their organizations and associations. Implicit in ICA's charter is the philosophy that a financial assistance institution intended to actively promote expansion and modernization of small farm enterprises will be confronted with the problem of slow repayments or default. With this in mind, the Government has isolated the ICA from more "strictly business" financial assistance organizations, and is prepared to write off ICA's inevitable losses as a social cost. The recent decree prohibits ICA from accepting deposits from the private sector.

Short, medium, and long term loans are granted on the following basis. Short-term loans of 2 years may be used for expenses related to soil preparation, planting, and harvesting; for the purchase of seeds, fertilizers, and vaccinations; fattening of livestock, and poultry raising. Medium-length collateralized loans with an 8-year term may be granted for purchase of agricultural equipment and machinery, land-clearing and pumping system equipment, and livestock. Long-term loans, preferably with land mortgage collateral, may be granted for up to 20 years for installation of irrigation systems, drainage projects, lining of irrigation and drainage canals, well drilling, land leveling, purchase of silos, construction of animal slaughter facilities, establishment of long-term yield crops, or for installations

for agricultural commodity processing. Generally speaking, the longer the term, the lower the interest rate. In addition to its lending activities, the ICA's charter authorizes the financing of small farmer export sales. It also provides funds to (Corporacion de Mercadeo Agricola-CMA Agricultural Marketing Corporation) for the purchase of agricultural products of small farmers, and investment in small farmer production or service enterprises. During 1974 CMA had purchased \$107 million of farm produce. Such investments are limited to a total of 25% of ICA's capital and reserves.

As of April 1975, total loans had reached approximately Bs. 130 million, (\$30.3 million). Loan applications in 1974 totaled approximately 200,000.

ICA's quota of the Fondo de Credito Agricola is Bs. 200 million (\$46.7 million). As of May 1975, disbursements from the Fondo totaled \$6.8 million. The total monetary equivalent of all applications was \$125 million.

The Government had, by May 1974, established 54 Mercados Populares (lower income distribution centers) in various regions of the country to help dispose of commodity surpluses purchased by CMA as part of the price supports on 36 commodities. It is estimated that 1.5 million Venezuelans are already benefitting from access to these subsidized distribution outlets. Producers complain that the Government's producer price supports, in many cases, approach too closely the Government's retail ceiling prices and, therefore, may represent maximum, rather than minimum, producer prices. Frequent press articles written both by producer associations and agricultural journalists complain that present support prices are not sufficiently remunerative. In this context, commentators have attributed the reluctance of farmers (and to a lesser degree, ranchers) to incur indebtedness to expand productive capabilities to their pessimistic appraisal of the Government's agricultural commodity price policies. Such commentators are calling for increased guaranteed prices, or removal of all price controls at the producer and almost 8.4 tons of retail levels, with amplified import tariff protection.

Fishery Development

The National Fishing Plan will shape the development of the fishing industry through 1980. The Plan not only lists projects but also indicates the research that will have to precede each project and the equipment and technology that will be needed to implement it.

One of the principal objectives of the Plan is to develop fishermen's cooperatives. These organizations would receive training and technical assistance from the Government as well as credits that would allow them to purchase equipment out of the reach

of individual fishermen. Cooperatives are also expected to be better able to deal with product distribution and thus obtain higher prices for the fishermen.

Another goal of the Plan is the reconditioning of the existing fleet and the purchase of new vessels. These new fishing boats probably will be imported since they are to be of advanced design and beyond the capability of Venezuelan shipbuilders. There are two shipyards in Venezuela today: ASTIZULIA (Asti Ueros del Zulia) and INLDUNERI both located in Falcon State at Paraguana. ASTIZULIA produces about 16 steel fishing boats of up to 150 tons annually; INDUNERI manufactures on a more limited basis. Some production of smaller fishing vessels also is being planned for two shipyards; one will be at Punto Fijo in the East and the other near Caripans in the West. They are projected under the Venezuelan Government's shipbuilding program (see Chapter 8, Transportation, for further information on shipyards).

EQUIPMENT REQUIREMENTS

Market Size

Due to the volatility in the demand for agricultural machinery (see tables 7, 8, and 9) and the lack of adequate statistics, market size forecasts are considered by equipment marketers to reflect only their current outlook. This is based on their experience and advance knowledge of future demand stimulants and deterrents. The total market for agricultural machinery and equipment exceeded \$95.5 million in 1975. It is forecast to reach \$130 million in 1979. Estimated imports supplied 83% (about \$79.5 million) of the 1975 figure and are projected at 75% of the 1979 market. Local production of agricultural machinery was estimated at \$17.5 million in 1975 of which \$1.5 million was exported. National production may grow from 20 to 30% in the next 4 years depending upon the progress of national tractor production and assembly project.

Table 7.—Imports, production and exports of agricultural machinery and equipment, 1972-75, and 1979
(in millions of dollars)

Year	Imports	Production ¹	Exports	Market size
1972	30.1	7	—	37.1
1973	24.4	10	1	33.4
1974	48.0	14	1	63.0
1975 ¹	79.5	18	2	95.5
1979 ²	98.0	40	5	133.0

1. Estimated.

2. Projected.

Source: Development Ministry foreign trade statistics; U.S. Department of Commerce Survey Team estimates and projections.

Table 8.—Venezuelan imports of agricultural equipment and machinery
(in thousands of U.S. dollars)

	1972	1973	1974
Cultivating Machinery and Parts			
United States	839	600	733
Italy	261	132	—
United Kingdom	80	—	—
Total Imports	1,391	891	—
Harvesting Machinery and Parts			
United States	1,883	1,492	4,287
Italy	246	239	—
United Kingdom	87	63	—
West Germany	81	74	—
Total Imports	2,383	1,929	—
Dairy Machinery			
United States	293	301	381
United Kingdom	11	32	—
Italy	—	20	—
Total Imports	348	512	—
Tractors (except for road and industrial use)			
United States	13,767	13,159	24,562
Italy	4,917	1,834	—
United Kingdom	3,289	3,147	—
West Germany	2,240	1,255	—
Total Imports	24,424	19,484	—
Other Agricultural Machinery and Apparatus			
United States	1,208	1,130	2,928
United Kingdom	146	30	—
Total Imports	1,392	1,199	—
Agricultural Machinery (all types)			
United States	18,018	16,736	33,043
Italy	5,448	2,235	—
United Kingdom	3,614	3,328	—
West Germany	2,373	1,366	—
Total Imports	30,077	24,397	—

Source: Estadísticas del Comercio Exterior de Venezuela, 1972, 1973, 1974, Ministry of Development, Caracas.

Marketing specialists see the following trends through 1978 expressed in constant 1975 values:

1976

Total market will rise 24% to \$98.4 million. National production for the Venezuelan market may be expected to grow at 30% reaching \$20.8 million, which will fix import demand at \$78.6 million.

1977

Apparent consumption is expected to reach \$118 million, or an annual growth rate of 20%. National production for the Venezuelan market is expected to grow at 30%, reaching \$27 million which fixes import demand at \$91.1 million.

1978

Total sales of \$129.9 million are exported, assuming a 10% real growth. National production may be expected to grow at between 20% and 31%, depending upon the progress of the project for national tractor production and assembly. This places national production for domestic consumption at between \$32.4 million and \$35.4 million with imports of between \$97.5 million and \$94.5 million.

The above figures do not reflect the substantial expenditures for government-financed agricultural commodity storage and irrigation programs which are now in the planning stage. Government estimates call for approximately \$70 million to be spent on commodity storage facilities during 1975 and 1976. During the period 1975-79, the Government plans to spend \$140 million for land rehabilitation programs of which irrigation systems development will be an important part. However, the tim-

Table 9.—Venezuelan imports of agricultural equipment and machinery, 1960-74
(in units)

Year	Wheel tractors two axle	Track-laying tractors	Plows	Disk Harrows	Seeders	Harvesters	Sprayers	Cultivators	Seed dusters	Wagons	Fertilizers
1960.....	1,037	103	410	617	137	35	163	383	5	123	—
1961.....	683	42	447	452	199	95	3,617	265	130	118	—
1962.....	1,908	20	1,362	1,430	331	80	9,841	329	20,383	63	—
1963.....	1,540	70	405	1,105	237	55	5,492	230	840	29	—
1964.....	2,039	91	962	1,680	266	123	10,076	270	434	66	—
1965.....	3,038	92	793	2,062	447	180	2,550	404	95	155	—
1966.....	1,678	214	457	1,250	451	181	4,906	214	485	101	—
1967.....	1,479	487	248	749	456	198	90	177	7	70	—
1968.....	1,764	106	280	515	352	164	10	103	—	24	—
1969.....	2,338	108	273	99	639	265	167	247	36	23	84
1970.....	2,692	581	177	175	434	133	128	284	6	58	70
1971.....	3,406	33	146	104	635	138	246	220	17	40	93
1972.....	2,380	127	42	—	529	104	127	141	—	5	137
1973.....	2,117	200	246	472	234	151	126	144	—	47	66
1974.....	2,728	220	315	167	433	485	209	306	42	6	32

Source: Ministry of Agriculture and Livestock, Agricultural Economics and Statistics Department, Caracas.

ing of these projects as well as the specifying of the equipment component which will generate import demand are so vague that valid import projections cannot presently be made.

CENSUS OF AGRICULTURAL MACHINERY

The Venezuelan Ministry of Agriculture and Livestock prepared a census of Venezuelan agricultural machinery located on large and small farms and in dealer inventories in late 1974. The results of the census are shown in table 10.

The Census of Agricultural Machinery was used by MAC (Ministerio de Agricultura y Cría—Ministry of Agriculture and Livestock) to provide a basis for determination of present and projected national agricultural equipment and machinery requirements (see table 11).

These requirements estimates were based on interviews and discussions with agricultural producer associations, large scale farmers, agricultural equipment and machinery dealers and upon the Ministry of Agriculture's livestock and agricultural objectives.

EQUIPMENT WITH STRONG IMPORT SALES POTENTIAL

Irrigation Equipment

The market for irrigation equipment was estimated at \$30 million in 1975, including government purchases. Sales increases of 30% to 40% are projected for 1976 and 1977. Through programs of the Ministry of Public Works, the Government intends to add 200,000 hectares of irrigated land during the current 5-year planning period. Meeting the objective will require the implementation of 41 projects budgeted to cost \$441,600 over the next 5 years.

This program has the dual objective of increasing overall material production and improving the productivity of small farmers who have been beneficiaries of the land reform programs of the National Agrarian Institute (Instituto Nacional Agrario). One source anticipates the installation of 500 100-hectare irrigation subsystems during 1976. The Ministry of Public Works estimates that approximately 5% of Government sponsored irrigation projects will entail the use of sprinkler systems. A trade source, however, estimates that 60% of total irrigation equipment sales, or \$24 million in 1975 were for sprinkler systems with a small percentage of drip systems and the balance for gravity, or inundation, systems. Tubing, coupling devices, and pumps (centrifugal up to 6", deep well submersible and turbine up to 14", and propeller up to 18"), are all manufactured in Venezuela in quanti-

Table 10.—Census of agricultural machinery, 1974
(in units)

	On agricultural establishments			<i>In dealer inventories</i>	
	<i>In use</i>	<i>Re-pairable</i>	<i>Unre-pairable</i>		<i>On site</i>
<i>Tractors</i>					
Less than 65 HP	5,415	799	233	6,214	128
66 to 90 HP	3,133	338	73	3,471	572
91 HP and over	1,217	172	26	1,389	392
Total	9,765	1,309	332	11,074	1,092
<i>Plows</i>					
Light (3 disks)	2,667	224	65	2,891	293
Medium and heavy weight (4 or more disks)	1,375	135	30	1,510	381
Rotary	45	8	1	53	111
Total	4,087	367	96	4,454	785
<i>Harrows</i>					
18 or less disks	2,993	393	273	3,366	341
20 or more disks	3,251	257	107	3,508	512
Total	6,244	650	380	6,894	853
<i>Seeders</i>					
2 rows	968	121	16	1,089	126
4 or more rows	1,013	136	12	1,149	115
Total	1,981	257	28	2,238	241
<i>Planters</i>					
Levelers	527	19	2	546	27
Back attachment	279	16	10	295	49
Front attachment	211	25	7	236	34
Land-plane type	165	12	2	177	9
Total	655	53	19	708	92
<i>Argentine Rollers (Rolos Argentinos)</i>					
Sprayers	1,163	335	545	1,498	26
Mechanized	900	138	94	1,038	89
Shoulder pack	2,695	405	285	3,100	560
Total	3,595	543	379	4,138	649
<i>Rotary mowers and brush cutters</i>					
Corn shellers	927	214	104	1,141	195
Sesame binding harvesters	220	81	81	301	1
Combines	383	12	2	395	—
Farm trailers and wagons	518	50	5	568	147
Total	2,632	322	89	2,954	51

Source: Ministry of Agriculture and Livestock, Caracas.

ties sufficient to meet national requirements under normal circumstances. Pumps larger than those described above are still being imported in substantial quantities, although import licenses are required. Centrifugal pumps of any size are subject to a 50% ad valorem duty rate. Approximately 60% of irrigation tubing is aluminum, while the balance is galvanized steel. Local manufacturers were unable to supply all requirements in 1975. Although a significant expansion of domestic production capacity is projected, it remains to be seen whether the expansion will be enough or on time to meet the requirements inherent in the very substantial government and private irrigation system development programs.

One source estimates that between 30,000–40,000 sprinkler head units are currently imported an-

nually, and that they will increase 30% per year for the next several years. Likewise, gasoline and especially diesel engines to power irrigation pumps show strong sales potential.

Center pivot, self-propelled automatic, and wheeled irrigation pipe movers all have substantial sales prospects. Depending on terrain characteristics, these types of equipment are being used for pasture, vegetable, peanut, beet, and citrus crop irrigation. It is estimated that 150-200 units were sold in 1975 with 50% increase expected for 1976. Investments in such types of equipment are being spurred largely by farm labor shortages.

Grain Drying, Grading, Conveying, and Storage Equipment

National production of grain drying, grading, conveying, and storage equipment is insufficient to meet present and projected requirements of increasing corn, rice, and sorghum production. Tariffs on such equipment (other than for silos and screw conveyors) are 1% ad valorem c.i.f., and import licenses are not required. Equipment inventories were reportedly inadequate to cover demand in 1975 and were limiting sales.

Sugar Cane Cultivation and Harvesting Equipment

Although increased planting has been somewhat retarded by low domestic prices and export controls on sugar, the Government announced in June 1975 the creation of a Bs. 200 million (\$46.7 million) fund to relieve growers and processors caught in the cost/price squeeze. This fund will be used to subsidize production at a projected level of Bs. 100 (\$23.33) per ton of sugar with the intent of bringing national prices more closely into line with world prices. Consumer prices will not increase.

This producer subsidy should stimulate buyer interest in four-wheel and crawler tractors, cane cutters and loaders.

Tractors

While requirements for tractors with horsepower (hp) ratings of less than 65 are actually expected to decline, requirements for 66-99 hp units are expected to more than double during the next 4 years. Units having hp ratings of more than 91 are expected to show a 75% growth rate. Most sellers of tractors refer to supply rather than demand as the critical factor during the next several years. At least one trade source feels that the Government now favors U.S. brand tractors. Tracklaying tractors presently represent approximately 8% of the total tractor market, but sources expect sales of this type will grow because of the trend towards more powerful units.

Table 11.—Agricultural machinery requirements, 1975-79
(in units)

	1975	1976	1977	1978	1979
<i>Tractors</i>					
Less than 65 HP	1,012	600	700	800	900
From 66 to 90 HP	1,280	1,800	2,000	2,300	2,600
91 HP and over	741	900	1,000	1,100	1,300
Total	3,033	3,300	3,700	4,200	4,800
<i>Plows and ground-breaking haws</i>					
Three disk	555	700	850	950	1,050
Four disks or more	821	950	1,100	1,300	1,550
Rotary	313	350	400	450	500
Total	1,689	2,000	2,350	2,700	3,100
<i>Disk harrows</i>					
Light	1,115	600	700	800	1,000
20 disks and over	1,982	2,400	2,700	3,000	3,300
Total	3,137	3,000	3,400	3,000	4,300
<i>Seeders</i>					
2 rows	561	250	275	300	325
4 rows	896	550	600	650	700
5 rows or more	345	250	300	325	350
Broadcast	220	250	300	350	400
Total	2,022	1,350	1,475	1,575	1,775
<i>Cultivators</i>					
Flexible arm and combination	414	240	300	350	400
Rotary	164	150	160	180	200
Total	578	390	460	530	600
<i>Fertilizers, lime spreaders</i>					
Requirements	695	500	600	700	750
<i>Subsoilers</i>					
Requirements	67	73	80	90	100
<i>Furrowers</i>					
Requirements	164	220	240	260	280
<i>Tractor mounted or drawn graders</i>					
Rear attachment	385	100	—	150	125
Front attachment	111	30	—	50	40
Land-plane type	52	15	—	30	20
Total	548	145	—	230	185
<i>Argentine rollers (Rolos Argentinos)</i>					
Requirements	642	200	240	280	320
<i>Sprayers</i>					
Mechanized	903	250	300	350	400
Shoulder pack	2,738	750	900	1,100	1,300
Total	3,641	1,000	1,200	1,450	1,700
<i>Rotary brush mowers and cutters</i>					
Equipment	375	400	430	465	500
<i>Silage cutters and harvesters</i>					
Equipment	1,180	500	700	850	1,000
<i>Corn shellers</i>					
Requirements	357	150	130	120	100
<i>Sesame binding harvesters</i>					
Requirements	104	60	65	70	80
<i>Combines</i>					
Requirements	311	150	155	165	180
<i>Farm wagons and trailers</i>					
Requirements	1,278	500	700	1,000	1,300

Source: Ministry of Agriculture and Livestock, Caracas.

Harvesters

Potato and peanut digging and harvesting equipment have high sales potential. Equipment for harvesting rice, sesame, sunflower, sorghum, and the most important crop, corn, will also have very strong potential. Sunflower is expected by one trade source to surpass sesame as Venezuela's most important oilseed. Harvester availability problems are said to be limiting sales. Cotton-picking machines also are in strong demand. Multicrop farmer cooperatives will be increasingly important buyers of harvesters.

Fertilizing Equipment

Fertilizing equipment and manure spreaders are rapidly growing in importance. The Government's plans to subsidize domestic fertilizer production are related to its irrigation programs, which they perceive as the primary means to substantially increase crop yields. Chemical fertilizer consumption exceeded 230,000 MT in 1973; ammonium sulfate, urea, dibasic phosphate, and potassium chloride were the most commonly used "primary" types.

Seeders, Manual and Mechanized

MAC's Expansion Service Division stressed the potential for this equipment. Corn seeders custom-designed for the particular kernel shape and size of Venezuela's varieties and sesame seeders (really rice planting equipment) would be of special interest. Potato seeders are also of interest.

Silage Processing Equipment

Silage choppers and balers, rakes, and conditioners for trench silage were also considered to have especially strong sales possibilities.

EQUIPMENT HAVING GOOD IMPORT SALES POTENTIAL

Poultry Incubators, Eviscerators, and Defeatherers

Government promotion of feed grains production can be expected to further expand the poultry industry as poultry meat becomes more price competitive with beef. The 1975 market for imported poultry production and processing equipment was estimated at \$2 million to \$3 million. Although there are no reliable statistics on current demand for eviscerators and defeatherers, the firms listed below are reportedly rapidly mechanizing their operations and expansion of the industry is probable.

Avi Campo C.A. in Caracas represents Gainesville and has a prominent position in the market for poultry raising and processing equipment. Except for feeders and waterers, which carry a 40% duty rate, poultry production and processing equipment is subject to minimum (1%) import duties, and import licenses are not required. Listed below are the names and Caracas addresses of several large Venezuelan poultry processing operations.

Empacadora Avicola	Edificio PROTINAL, piso 1, California Sur
Empacadora Nutricos	Calle Pantin N 80 95, Chacao
Avicola Carapa	Calle 4, Urb. Carapa
Carrizal	Carretera Las Mayas, Vio La Mariposa, N 80 9 111
Santa Clara	Calle Miranda, Qua. Carpa, El Paraiso
La Constancia	Edif. Mod. Local B, Urb. Lebrun, Petare
Maella	Carretera San Pedro, entrada Carcel de Mujeres, Los Teques
La Flor de San Antonio	Av. Roosevelt, Qta. Olga, N 80 9 36, Los Rosales
Gramoven	Edif. La Previsora Piso 8, Sabana Grande
Benaves S.A.	Barola, Carriza
Avicola El Campo	Av. Victoria, Edif. Appia, Local 3
Italia	Calle Cecilio Acosta N 80 9 38 Los Teques
La Ponderosa	Esq. No Pastor a Miseri- cordia, Edif. Granko, Local B

Milking Machines and Milk Chilling Tanks

Milk production has increased as a result of producer subsidies and import tariffs on powdered milk. Through price support and a guaranteed market for chilled milk, a large percentage of dairy operators are investing in plant mechanization projects. Although no reliable official or unofficial statistics are available, the total national market for dairy farm equipment in 1975 was estimated at between \$1.5 million and \$2 million with annual growth of 15% to 20% anticipated for the next several years. Of the 1975 market total, approximately 90% was spent for chilling tanks, and the balance for milking machines. There is no national production of milking machines and only minimal production of chilling tanks.

Miscellaneous

Sales of tractor-mounted posthole diggers are strong and trending upward. There is a substantial shortage nationwide of barbed wire. Sources in MAC expect the shortage to get worse as ranchers accelerate fencing projects.

LARGE VOLUME EQUIPMENT BUYERS

Provedeagro

Founded in early March 1975, Provedeagro (Productores Venezolanos de Agricultura—Venezuelan Agricultural Producers) is a corporate entity formed by FEDEAGRO (Federacion Nacional de Asociaciones de Productores Agropecuarios—Associations). FEDEAGRO holds 51% of the capital stock of Bs. 2 million (\$467 million) and 49% is held directly by FEDEAGRO member associations. Purchases in May 1975, alone were \$7.5 million and projected 1976 monthly volume is \$2.8 million. Provedeagro's director stated that his corporation has "right of first refusal" on buying equipment and machinery on behalf of 77 FEDEAGRO member associations. If it is determined that there is not mutual benefit, i.e., negotiating leverage for Provedeagro and better prices or delivery for the end user, then the association is freed to arrange the purchase itself, if it wishes.

Provedeagro has obtained a Bs. 43 million (\$10 million) loan from the Agricultural Credit Fund through Bandagro to finance initial purchases. Provedeagro's activities include the rendering of assistance to sponsoring associations in arranging financing of purchases. The Corporation is in the process of establishing representation agreements for equipment although it currently uses competitive bidding in contracting its purchases.

Since Provedeagro's "clients" include nearly all regional and crop oriented associations of medium and large scale farmers, and several livestock associations, its potential to become a very large volume buyer is impressive.

SUCAM

SUCAM (Suministros Campesinos—Farm Supplies) operates as volume purchaser for small-scale farmers (less than 20 hectares). It is a corporate entity formed by Federacion Campesina de Venezuela (Farm Federation of Venezuela), which holds 98% of SUCAM's capital stock. It has been in existence for 10 years, during which time it has purchased and sold slightly more than \$23 million worth of equipment, machinery, and tools for small farmers and their various associations. Its Director

General occasionally travels abroad on buying trips, and currently has representation agreements with Thompson International, Reed Joseph Co., David Brown, Farrow Irrigation, ARBOS (Italian affiliate of White Farms), SAME (Brazilian affiliate of White Farms), Industrias Metalurgicas APOLO (Colombian), and Oernes Masken (Danish).

The Director General of SUCAM estimated SUCAM's total sales reached \$30 million in 1975, quadrupling 1974's total.

CMA

CMA (Corporacion De Mercadeo Agricola—Agricultural Marketing Corporation) is responsible for administration of the Venezuelan Government's price support programs, and is in charge of agricultural commodity imports. In addition, CMA acts as the Government's buying agency for tools, implements, and machinery which are used in "extension service" type projects and sold to small farmers.

Purchases reached nearly \$10 million in 1975, with a 20% increase forecast for 1976. CMA's purchasing manager said that 60% of the value of his agency's purchases in 1975 were for agricultural tractors. Since 1972, it has purchased 420 agricultural tractors.

Purchases are contracted through competitive bidding with local firms and with foreign manufacturers.

CMA's charter includes responsibility for purchases of imported fertilizers, herbicides, insecticides, and other farm supplies. However, IVP (Instituto Venezolano de Petroquimica—Venezuelan Institute of Petrochemicals) still contracts for government purchases of fertilizer to supplement IVP production. Other government agencies purchase herbicides from local manufacturers who also arrange for importation.

MOP

MOP controls a large percentage of the Venezuelan Government's irrigation programs, and is the major contracting agency for irrigation project equipment and services. This activity is centered in MOP's Office of Water Resources (Direccion General de Recursos Hidraulicos) which maintains an excellent staff representing several technical disciplines.

FNG

FNG (Federacion Nacional de Ganaderos—National Cattlemen's Federation) is comprised of 100 regional associations with an average membership of 1,500 members each. A Federation spokes-

man stated that equipment for deforestation, plowing, seeding pastures, and spray and siphon irrigation are most in demand. The Federation has no central purchasing agency, but many regional associations do perform this service for their members, and regional association cooperatives are tending to buy more expensive types of equipment for joint use by their members. Large volume potential customers for agricultural production and livestock raising equipment include:

Hato La Vergarena	Cattle ranching
Compania Venezolana de Ganaderia (King Ranch Subsidiary)	Cattle ranching
Centro de Engorde Portuguesa C.A.	Cattle ranching and feeding
PROTINAL C.A.	Biological and veterinary supplies distributor and livestock and poultry feed producer
Agencias Vivas	Sugar cane and rice grower
INVEGA C.A.	Rice grower
Empresas Agricolas Asociadas	Rice grower
Arrocera Occidental	Rice grower
Agricola La Goajira	Corn grower
Hacienda Santa Lucia	Corn grower
Concepcion Quijada	Corn, cotton, and sugar cane grower
J. Heinz	Sugar cane grower
Jesus Iraich	Sugar cane grower
El Palmer (Vollmer group)	Sugar cane grower
NARFARMS Inc.	Vegetables, sorghum, cattle

PRINCIPAL SUPPLIERS

Sales outlets for agricultural equipment and machinery are presently dominated by three firms, which are described below. Trade sources estimate that these firms supply 75% or more of the total national market.

Maquinarias Mendoza is a subsidiary of the "Mendoza Group," a true conglomerate which has investments in the fields of construction, tobacco, paints, textiles, cement, paper, insurance, real estate, banking, food processing, etc.

In addition to their Caracas headquarters, Maquinarias Mendoza has seven branches located throughout Venezuela. The Caracas office is divided into functional areas, with an agricultural equipment and machinery section, a section which spe-

cializes in design and sales of irrigation systems, an industrial machinery section, and a special projects section.

Maquinarias Mendoza represents an extensive list of foreign manufacturers, as well as two relatively large-scale local manufacturers.

Among its current foreign representations are Clark, Grove, Terex, Marion, Muller, Case, New Holland, Cameco, Eversman, GM (irrigation pump engines), Worthington, Marlow, Rain Bird, and Wade Rain, all of the U.S. They also represent the British Leyland line of tractors. In 1974 Maquinarias Mendoza established a tractor overhaul facility adjacent to their sales outlet in the city of Guanare. RESEMCA, as this facility is called, is equipped to rebuild Case, Oliver, and Leyland tractors at the rate of one unit per day.

ACO S.A. markets the full line of John Deere tractors and implements, BOSS irrigation equipment and the entire output of the local licensee of the Rome Plow Co., Taller Nacional Portuguesa. In addition it sells large quantities of other nationally produced implements. ACO also represents Hyster and Atlas-Copco. The company is interested in joint ventures for the local production of agricultural equipment and machinery. Future local manufacturing projects in which ACO is interested include: (1) a tractor manufacturing operation in which ACO would participate along with John Deere and (2) a joint venture with CVG (Corporacion Venezolana de Guayana Corporation of Guayana, the regional development organization which controls most metal manufacturing in Venezuela) to manufacture a complete line of irrigation equipment, with special emphasis on portable aluminum systems.

ACO has 10 branch offices throughout Venezuela. ACO's 1974 sales of agricultural equipment and machinery were reported to have been \$15.9 million.

INTERSAN S.A. is a subsidiary of Sanchez and Cia. In addition to representing International Harvester in all but a few far western states, where Maquinarias Internacional represents IH, INTERSAN's Caracas headquarters and eight branch offices in other major cities represent Hesston, Bucyrus Erie, Galion, Gandy and John Bean. An affiliated company, Bombaqua, designs irrigation systems, and sells equipment manufactured by Rainbow and Valmont and manufactures pumps under a licensing agreement with Worthington, ITT Marlow, and Jacuzzi. INTERSAN's parent company, Sanchez & Cia. represents Gehl, FMC, De Laval, CREPACO, and Lister, among others.

Ford Motor de Venezuela C.A. markets Ford tractors and implements through 14 outlets.

Another firm important in Venezuelan agribusiness, although not in equipment marketing is PROTINAL, an affiliated company of Maquinarias

Mendoza. PROTINAL, which produces approximately 50% of the 1.2 million-MT annual national requirement for feed, was founded in 1942, when imported supplies of chickens and eggs were cut off. The company employs 120 technicians. Approximately 40% have advanced degrees obtained, in many cases, in the United States. These technicians formulate all animal feeds for Venezuelan needs, as well as custom-formulating feeds for a large American feed company. A company source estimated that 60% of all feed formulated under the PROTINAL label is for poultry, 20% is for swine, 15% for cattle, and 5% for pets and miscellaneous animals such as rabbits and trout. The same source estimated that PROTINAL may supply as much as 80% of Venezuela's poultry feed demand.

PROTINAL has developed 16 hybrids of sorghum which are more resistant and give better yields under Venezuela's climatic and soil conditions. They expect to plant 50,000 hectares in sorghum next year, anticipating yields of 3 MT/hectare, hoping thereby to reduce Venezuela's sorghum imports by as much as 25%. Total production of animal feed is expected to reach 2 million MT by 1980.

LOCAL PRODUCTION

Total Venezuelan production of agricultural machinery and equipment in 1974 was estimated at \$14 million. Production was expected to increase to \$17.5 million in 1975. Depending upon government policies, a 30% increase is likely for 1976.

Industry source estimates of national production (in units) for 1975 and their comments as to exports and imports are as follows:

Plows, fixed and reversible, 1,000.—Imports are largely of heavy and sophisticated types.

Disc harrows, 4,500.—Imports relatively unimportant. National production is adequate to meet demand. There are some exports.

Seeders and planters, 1,000.—Local production is restricted to less sophisticated types. Specialized multifunction types still largely imported. Cultivators, 1,500.—National productive capacity exceeds current demand. There are some exports.

Trailers, 650.—All self-loaders are imported though in small quantities.

Centrifugal (up to 6"), submersible and turbine pumps (up to 18"), 25,000.—Several local manufacturers produce these under foreign licenses. National production is more than adequate to meet demand.

Silos.—Industry sources estimate that 85% to 90% of national consumption is still imported, in spite of a 40% c.i.f. ad valorem duty.

Rotary cutters, 1,200.—Perhaps 100 to 200 extra large ("manta"-type) units per year are imported.

Poultry feeders and waterers.—No reliable estimate available, but industry sources indicate that the production of three national manufacturers is sufficient to meet demand. Locally produced equipment is reportedly technologically inferior to that being produced elsewhere.

Venezuelan manufacturers of agricultural equipment and machinery (see table 12) will attempt to increase their production of traditional items and to diversify into additional products during the next several years. Nevertheless net import requirements for many of the types of equipment listed above will continue to be substantial.

Table 12.—Local firms manufacturing agricultural and machinery

Firm	Location
Rota-Agro, Fabrica Venezolana de Implementos Agricolas. S.A.	Maracay
Industria Metalurgica Trabucco, C.A. "Imetra"	Calabozo
Nardi Venezuela C.A., Fabrica de Marquinarias e Implementos Argicolas	Barquisimeto
Corporacion Miranda C.A.	Moron
Implementos Agricolas S.R.L. "Impagro"	Maracaibo
Metalmeccanica de Occidente C.A. "Impagro"	Maracaibo
Agro-Maquinarias S.R.L.	Maracaibo
Maquinaria Oriente C.A.	Maturin
Taller Nacional Portuguesa C.A. "Tanapo"	Acarigua
Industria San Miguel	Acarigua
Industria Agro-Industrial Dagrosa	Acarigua

Source: Association of Metal Working and Mining.

The Venezuelan agricultural equipment and machinery industry is still in a developing stage. It is protected by tariff and or import license restrictions applied against those types of equipment it is able to produce in sufficient quantities to meet national requirements. The industry is continuing to expand production of traditional items and to diversify into new products. Local sources appear certain that as soon as negotiation with Venezuela's Andean Pact partners can be resolved, the Government will promote the installation of an agricultural tractor assembly plant. This plant eventually would manufacture between 35% and 50% of all necessary components (including diesel engines). The outline of the current 5-year plan refers to a project to build 6,000 tractors and 10,000 diesel engines. CVG (Corporacion Venezolana de Guayana-Venezuelan Corporation for Guayana) reportedly discussed this project with several potential minority partners,

including International Harvester, J. I. Case, John Deere, Otto Deutz (West Germany), and Fiat (Italy). Recent reports indicate that John Deere has been chosen by CVG as the concessionaire and will have a 25% equity. The remaining equity participation will be divided between CVG, ACO S.A. (who represents John Deere in Venezuela), and other private Venezuelan investors. Initial capitalization reportedly will be Bs. 50 million (\$12 million), which later is to be increased to Bs. 150 million (\$35 million). Industry analysts believe that a project of this size will require a substantial export market for tractors and engines, most likely the ANCOM countries.

ACO Hydraulica is said to be considering a project to manufacture a full range of irrigation equipment including pumps, pipe for buried systems, and mobile aluminum spraying units.

Rota Agro in Maracay and Industria Metal Mecanica Trabucco C.A. (IMERTA) in Calabozo produce approximately 60%, and 15% respectively, of total national output of tractor-drawn implements.

Taller Nacional Portuguesa C.A., "TANAPO," is located in Acarigua. It manufactures disk harrows and plows under the license of the Rome Plow Company of the United States.

Tubo-Ven reportedly is the most fully integrated Venezuelan supplier of irrigation equipment. Tubo-Ven fabricates tubing, couplings, and accessories for non-mobile irrigation systems in their plant in Barquisimeto.

Nardi Venezuela C.A. in Barquisimeto is presently the only manufacturer of planting equipment which Nardi produces as seeder-fertilizer combinations.

Industrial Hadria (to be renamed Agro-Metal) is a subsidiary of Sanchez & Cia. for manufacturing corn and rice dryers, rice polishers, and grain conveyors and buckets. This operation will be substantially expanded, according to trade sources and will also manufacture grain storage silos under license of Read Steel Co.

Table 12 lists firms engaged in the local production of agricultural machinery and equipment.

IMPORT REGULATIONS

The Imports Division of the Venezuelan Ministry of Development (Ministerio de Fomento) is responsible for administration of Venezuela's import licensing program. Import licenses are required for several types of agricultural equipment and machinery that are produced in Venezuela.

Reportedly, import licenses can be obtained with relative ease if the desired equipment is of such specialized design as to fulfill a performance re-

quirement beyond the capability of Venezuelan-made equipment, or if local production of similar equipment is insufficient to meet demand.

The director of the import licensing office has stated that the Government hopes to phase out import licensing during 1975 in favor of existing tariff protection of Venezuelan production.

As a stimulus to private investment in agriculture and farm mechanization, the Government is currently waiving import duties on farm machinery. In addition, the impact of import duties is reduced by the fact that imports by government entities or for official projects are exempt from duties and taxes. This waiver is especially significant on those types of equipment being produced in Venezuela, because the import tariffs can reach 40% to 50%. The waiver is usually applied when local production falls short of domestic needs.

PRICE CONTROLS

The June 12, 1975 issue of the Venezuelan Government's official gazette (Number 30,717) contained a decree which established maximum prices to be charged to the ultimate consumer for various categories of agricultural implements, by brand and model. Prices on harrows of all types, ground-breaking disk plows, rotary cutters, flexible arm cultivators, fertilizer/seeder combinations, rotary fertilizers, rotary cultivators, rolos argentinos farm wagons, and other subcategories are now controlled in order to limit dealer speculation which resulted from recent equipment shortages. The decree provides for dealer gross margins of no more than 30% to 35%.

It is noteworthy that with one exception (a specific brand of rotary cultivator) prices for imported equipment were not regulated by this decree. In addition, the Ministry of Development issued a decree that would also limit dealer gross margins on sales of imported tractors.

Listed below are the ranges of prices for several types of equipment (U.S. \$1=Bs. 4.28):

Clod-breaking harrows (hydraulically controlled)	
16-24" disks	Bs. 5,576
36-24" disks	Bs. 13,276
Heavy harrows (with trans- port wheels)	
10-28" disks	Bs. 14,768
24-28" disks	Bs. 41,951
Fixed and reversible plows	
Fixed, 2 disk	Bs. 3,876
Fixed, 5 disk	Bs. 6,920
Reversible, 3 disk	Bs. 6,460

Rotary mowers (hydraulically controlled)	Bs. 4,633 to 5,717
Flexible arm cultivators	Bs. 3,044 to 4,262
Fertilizer, Seeders	
2 row	Bs. 7,722
4 row	Bs. 15,444
“ROME” disk harrows	
18-24" disks	Bs. 9,100
16-32" disks	Bs. 38,906

MARKETING INFORMATION

Financing

When Agricultural Credit Fund financing is not available for credit purchases, local dealers frequently finance sales through foreign supplier lines of credit. Customer credit terms are based on the terms of such foreign credits, the corresponding bank charges, foreign exchange risks, and finance conditions.

Margins

Markups vary depending on the type of machinery or equipment and installation requirements. Distributor's markups are generally 30% of the landed cost of imported items. One major distributor gives a 25% discount on equipment sold to its dealers. Another grants a 10% discount of list price for initial sales to dealers, with additional discounts according to incremental purchase volume levels.

Warranties

Most tractors carry a 12-month warranty, while other agricultural machinery and equipment carry a 90-day warranty.

Service and Spare Parts

Distributors and dealers, normally provide equipment service and maintenance and keep substantial stocks of parts and replacements. Many foreign manufacturers send technicians to provide maintenance and repair assistance. Complaints have been voiced by some users that service is deficient and that the prices of spare parts are high. In this regard, one of the principal demands of Provedagro is that suppliers of agricultural machinery make simple spare parts available separately rather than in subassemblies or kits which often contain unneeded components. One major distributor of U.S. products carries a permanent stock of 40,000 items

—valued at about \$1 million—available in eight warehouses located in the major rural market areas.

Representation

Manufacturers opening up distribution channels for the first time will find it necessary to support distributors with component sales and service personnel. Exporters of specialized equipment for which there are few potential buyers will want to appoint an already established, highly respected sales agent to take indent orders for direct shipment.

Competitive Factors

Price is often of secondary importance if buyers are convinced that higher-priced equipment will result in greater productivity, that service and replacement parts are easily available, and that prompt delivery is possible. These three factors are generally the most crucial in sales decisions.

Promotion Techniques

Equipment demonstrations conducted in farming communities are the most widespread and effective sales promotion technique. The Venezuelan farm machinery trade uses extensive advertising in newspapers, movies, and magazines, and on radio, television, and billboards. A typical advertising budget for agricultural machinery might allot 40% for demonstrations, 30% for press ads, 25% for radio, and 5% for movie trailers shown before features in rural motion picture theaters.

Agropecuaria Moderna is a popular local magazine which also sponsors radio broadcasts over 13 Venezuelan stations. Other important agricultural publications are:

Agricultura Venezolana

Vida Rural

Tribuna Agropecuaria

Revista Pecuaria

El Agricultor Venezolano (published by the Ministry of Agriculture and Livestock)

Revista Agronomia (published by the Venezuelan Association of Agricultural Engineers)

In addition, important local newspapers have sections devoted to news articles and editorials of interest to the agricultural sector.

Well-established brand names and trademarks have enormous significance. Tractors, for instance, are identified by their trademarks and end users show considerable loyalty by their repeat purchases. Much newspaper advertising, for example, seems designed to reinforce manufacturer/dealer name association in the minds of potential customers. The

combination of an aggressive sales force, a good quality and service reputation and effective promotional campaign is considered the key to successful sales.

Trade fairs are another mechanism for reaching the Venezuelan market. All trade fairs are coordinated by the Comision Coordinador de Ferias y Exposiciones del Gobierno de Venezuela (VEN-EXPO).

Public Procurement Procedures

U.S. suppliers can be placed on the bidders' list of various government procurement agencies if they have commercial representation within the country or file an application on company letterhead indicating their interest and appoint a person or corporation within Venezuela to act on their behalf. To qualify for bidding, the U.S. company must file legalized documents in Spanish describing its organization, activities, and financial standing. A single submission of such data is sufficient. Public tenders issued by government agencies sometimes allow little time for reply, however, and response has been known to be required within 8 days from the date of the invitation to bid.

Government procurement agencies generally give first preference to domestic suppliers and, if the product cannot be obtained locally, will turn to foreign companies domiciled or represented in Venezuela. Proposals for some international procurement are solicited from prequalified firms.

Technical Requirements

Venezuela has no special standards applicable to packaging or performance on U.S. manufactured agricultural machinery and equipment. Service and operation labeling, operating and service manuals, parts catalogs and product specifications should be in Spanish. This is a mandatory requirement in the case of sales to the Venezuelan Government.

Electric power in Venezuela is supplied in most areas at 120/208 and 120/240 volts, 60 Hertz, 1 or 3 phase, 2, 3, and 4 wire. INOS (Instituto Nacional de Obras Sanitarias—National Institute of Sanitation Works) administers water supplies nationally and can provide data on water characteristics.

The metric system of weights and measures and the centigrade temperature scale are the official standards in Venezuela, although local engineers and technicians understand U.S. units.

3 Food Processing and Packaging

For the last several years, the growth of Venezuelan food and beverage processing industries has significantly exceeded that of gross domestic product and of manufacturing in general. In view of Venezuela's rapidly increasing population and improving standard of living, these industries should continue to expand with a definite trend toward further mechanization and automation.

In 1975, Venezuelan imports of food and processing and packaging (FPP) equipment amounted to approximately \$113 million. A 10% average annual import demand growth rate is expected during the period 1975-1979. The U.S. share of the Venezuelan FPP import market is approximately 50%, and this is expected to rise over the next few years. Venezuelan production of FPP equipment is still not an important factor in total supply, although Andean Common Market (ANCOM) sales possibilities are likely to stimulate the development of this industry. Special sales opportunities exist in the sugar and dairy industries. Government sponsored investment in this sector could approach \$300 million during the next 5 years. There are no important Venezuelan tariff or non-tariff barriers against imports of most types of FPP equipment.

Except in rural areas, processed foods are as common and numerous in the Venezuelan diet as in the United States and the use of "convenience" foods is becoming increasingly widespread.

Venezuelan food distribution volume seems fairly well balanced between U.S.-style supermarkets, with

a wide range of domestic and imported food stuffs, and neighborhood grocery stores, which may stock no more than 100 staple items.

Restaurants seem more numerous in Venezuela than in the United States and Venezuelans frequently dine away from home.

Most types of activity within the Venezuelan food

Table 2.—Employment averages by type of food and beverage processing operation, 1971

	Average number of employees	Number of industrial units
Food		
Meat slaughter and processing	87	42
Milk products processing	48	95
Fruit and vegetable processing and packaging	53	44
Seafood processing	198	16
Animal and vegetable fats and oils . .	310	12
Cereal and grain milling	51	81
Sugar milling and refining	109	44 ²
Bakery products preparation	12	1,091
Cocoa, chocolate and confectionery	63	37
Other food processing	25	131
Total	29	1,593
Beverages		
Liquor distilling	33	53
Wine production	29	6
Beer and malt production	377	8
Non-alcoholic and carbonated	56	75
Total	64	142

¹ The discrepancy between this figure and the food total is thought to be due to the inclusion of animal feed producers.
² Includes rural community cane presses.

Table 1.—Food and beverage industry contribution to total Venezuelan production and manufacturing sector output, 1972-74
 (in millions of Bs., 1968 prices)¹

	1972	1973	Percent change	1974	Percent change
Gross domestic product	55,878	58,878	5.4	61,901	5.1
Total manufacturing (excluding coal and petroleum derivatives	9,350	9,976	6.7	10,901	9.3
Food	1,888	2,022	7.1	2,290	13.3
Beverages	829	958	15.6	929	-3.0

¹ Bs. 4.28 = U.S. \$1.

Table 3.—Profile of food and beverage industry, 1972

	No. of establishments	Value of Production
Processed food		
Fresh and preserved meat	54	363,322
Fresh and chilled beef	31 ^(1,2)	253,000 ⁽¹⁾
Poultry and red meat except beef products	20	47,216
Preserved meat and meat products	34	63,106
Total	1,599	1,289,266
Processed milk products		
Butter and cheese	27	26,064
Powdered and condensed milk ..	5	92,071
Pasteurized milk and derivatives..	18	99,467
Ice cream	40	14,088
Other milk based desserts	3	838
Total	93	232,529
Processed and preserved fruits and vegetables		
Sauces, pickles, and soups	11	50,904
Marmalades, jellies, and dried fruits	23	7,176
Fruit and vegetable juices and juice concentrates	11	32,944
Total	45	91,024
Fish, shellfish, and other marine products		
Canned seafood	8	26,453
Salted smoked and dried seafood.	10	16,459
Total	18	42,912
Edible animal and vegetable fats and oils	19	129,509
Edible vegetable fats and oils ...	14	126,882
Milled cereal products		
Crushed and milled wheat	15	74,850
Milled rice	27	21,183
Milled corn	13	1,465
Ground corn for flour	15	61,279
Cereals processing	6	11,530
Total	76	170,307
Bakery products		
Bread and pastry	1,156	71,882
Crackers and cookies	16	17,534
Noodles	65	50,992
Total	1,237	140,408
Sugar refinery products		
Refined sugar and by-products ..	12	90,595
Raw sugar	3	103
Total	15	90,698
Cocoa, chocolate and confections		
Chocolate and other cocoa-based products	7	21,042
Candy & confections	35	27,614
Total	42	48,656
Roasted and processed salt	63	49,666
Milled and processed salt	11	5,070
Ice, except dry ice	50	4,351
Vinegar and spices	9	14,441
Miscellaneous foods	6	6,476
Beverages		
Distilled spirits	54	64,002
Wine	8	8,779
Beer and malt	9	164,042
Total	159	331,775

Table 3.—Profile of food and beverage industry, 1972—Continued

	No. of establishments	Value of Production
Non-alcoholic and carbonated beverages		
Flavored beverages	71	91,577
Bottled water	17	3,375
Total	88	94,952
Total Food & Beverage	1,948	1,854,199

¹ Estimated.

² Larger than 300 square meters (1973).

processing industry appear profitable. A large number of those firms interviewed have either recently completed or were contemplating modernization, expansion and/or diversification programs.

One potentially limiting aspect of the FPP industry's prospects is the government's retail price controls. Many commonly-consumed items, ranging from garlic to rice to soft drinks, are subject to these controls. FPP industry spokesmen occasionally criticize the Government's price policies. Fairly recently, two soft drink bottling plants in Maracaibo were closed because, according to the press, increased industrial sugar prices narrowed the plants' operating margins to an intolerable degree. However, this type of situation appears to be an isolated phenomenon.

Food and beverage production volume and general industry characteristics may be found in tables 1, 2, and 3.

Of a total of 1,610 food processing operations surveyed in 1971, 510 were located in the Caracas area. The concentration of beverage manufacturing operations followed a similar pattern, with nearly half of all firms shown to be in a narrow radius of Caracas.

SUGAR AND CONFECTIONERY MANUFACTURING

Production figures for the major products of this industry are shown in table 4.

The most important single firms in the Venezuelan sugar industry is Centrales Azucareros C.A. (CENAZUCA) which currently owns and operates six mills and has equity participation in two others. CENAZUCA is an autonomous organization of the government development corporation Corporacion Venezolana de Fomento (CVF).

Sugar producing facilities owned and operated by CENAZUCA are listed in table 5.

Another important entity within the sugar sector is the "Vollmer Group" headed by Gustavo J. Vollmer. This group owns two sugar mills as well as "Santa Teresa C.A.," a major rum distillery. The two Vollmer Group sugar mills are: Central El

Table 4.—Sugar and confectionery production, 1972–73
(metric tons)

	1972	1973
Refined sugar	483,259	469,294
Brown sugar ⁽¹⁾	77,874	—
Molasses	269,138	281,420
Chocolates and cacao products ⁽¹⁾ (excluding cocoa butter)	8,357	—
Confectionery	17,164	—

¹ Estimated.

Table 5.—Sugar producing facilities owned and operated by CENAZUCA

Mill	Location	Cane milling capacity in Metric Tons/Day
CVF Central Cumanacoa	Cumanacoa, Sucre State	3,000
CVF Central Tacarigua	Tacarigua, Carabobo State	2,000
CVF Central Motatan	Motatan, Trujillo State	1,400
CVF Central Urena	Urena, Tachira State	1,000
C. A. Central Rio Turbio	Barquisimeto, Lara State	6,000
CVF Central Rio Yaracuy	Carbonero, Yaracuy State	4,000

Note: CORPORIENTE, a regional development corporation operates one mill that may be absorbed by CVF Centros Azucareros.

Palmar S.A. at San Mateo, Aragua State, (6,500 MT/day); Central Yaritagua at Yaritagua, Yaracuy State (2,200 MT/day). Central El Palmar is profiled in Appendix A.

Industrias Savoy C.A., also discussed in Appendix A, reportedly enjoys an 80% market share position in the Venezuelan confectionery industry, and operates a cocoa products processing plant called Granos de Oriente. It reportedly is about to embark on the installation of a large vegetable processing and canning plant.

Although not a producing group, another key organization in the sugar sector is Distribuidora Venezolana de Azucres (DVA) S.R.L. DVA is a non-profit organization whose membership includes all Venezuelan commercial sugar producers. It is the exclusive marketing agency for Venezuelan sugar. DVA handles distribution to the national market as well as exports, as national production permits. It is estimated that 56% of the sugar going to the national market goes into retail channels, and 44% is bought for industrial use.

DVA is chartered as an autonomous organization. The board of directors includes one representative from each of the mills. DVA maintains several storage facilities in support of its distribution function.

The Department of Industrial Promotion of DVA has programs to assist member organizations

through the provision of technical assistance, credit facilities, personnel training programs, promotional aids, and market research. This assistance is designed to aid in the development of new sugar based products that will increase national sugar consumption.

Central Melaport (owned by Meladuras Portuguesa C.A.) began operations in late 1974. It is located at the center of a newly-opened 7,500 acre sugar-growing tract in Portuguesa State. Traditionally, Venezuelan sugar mill operations have been similar in design to those of the U.S. and Europe. Central Melaport, however, was built around the Rotocel process, a technique developed in Venezuela. Rotocel is said to represent a substantial departure from traditional sugar cane processing techniques. It employs a diffuser process that leaches syrup from the cane through means of a centrifuge-type processing system. The Central Melaport facility includes 18 diffuser cells and a battery of four evaporator units that concentrate the syrup into a thick liquid, which is then transported to refineries. Central Melaport has a rated capacity of 1,000 metric tons of syrup concentrate per day. Since the cost of the installation is considerably less than that of a traditional mill, it is said that the process can be economically employed in cultivated areas of as little as 1,000 acres.

The Rotocel process adapted to sugar cane is also said to have various other advantages over mills of traditional design. As it can be operated profitably with a smaller cultivated area, new tracts of agricultural land can be exploited. In the past it has been necessary to delimit sugar cane cultivation to areas within 60 miles of the mill, and extensions of at least 10,000 acres were required for economical operations.

The new process is designed to allow greater efficiencies through production of a sugar concentrate in a form that can be stored and transported easily. One truckload of Rotocel syrup concentrate is supposed to equal approximately 20 truckloads of cane.

The Rotocel process is practically frictionless. Downtime is expected to be reduced from the customary 20% to almost zero since the Melaport's management concept is to establish Rotocel installations at various points throughout the agricultural sector, derive the concentrated syrup from decentralized installations, and transport the concentrate to a central refining operation. The cost of the Melaport installation is estimated to be about 40% of the cost of a standard sugar mill with the same derivative capacity.

By accommodating Venezuela's uneven terrain and relatively underdeveloped highway system, which traditionally have resulted in problems of plant processing scale and logistics, the Rotocel

process may make it possible to open up substantial new sugar cane cultivation areas. Another feature of Melaport's installation is that it is to be operated year-round rather than only during cane harvest season. It can also be used to extract edible oils from sesame, corn, or peanuts during the cane-growing season. Melaport is reportedly planning to establish three other similar installations in western Venezuela.

The Rotocel system was adopted to cane sugar extraction in Venezuela by Alberto Caldera, who claimed world rights to the process. At least four other countries have begun negotiations to use the process abroad. The Melaport project was partially financed by the First National City Bank of New York.

With the exception of the Rotocel process referred to above, R&D expenditures of the sugar sector seem to be low. Industrias Savoy C.A. appears to have a strong commitment to new product development, and DVA's charter provides for this type of marketing assistance to its members. Otherwise, no important marketing developments are foreseen.

BEVERAGE PRODUCTION

Production figures for important component products are estimated in Table 6.

Pampero and Santa Teresa, both of the Vollmer Group are the two most important distillers of spirit beverages. The principal product is rum. Pepsi Cola de Venezuela has gained a very large share of the local soft drink market. Hit de Venezuela and Frescolita de Venezuela are Pepsi Cola de Venezuela affiliates that market non-cola soft drinks. Pepsi Cola is said to have purchased several high-speed liter bottle filling machines from an Argentine manufacturer. Cerveceria Polar and Cerveceria Nacional (brand name Zulia) together have a very large share of the national market, and expansion of these two firms appears to be almost continuous. Polar is reported to have recently installed three 1,600 bottle-per-minute bottling lines,

Table 6.—Beverage production, 1972, 1974, and 1975
(in thousands of liters)

Beverage	1972	1974	1975 ¹
Rum (not aged)	16,861	10,082	10,479
Aged rum	14,104	8,117	8,419
Sweetened liquors	3,708	—	—
Beer	452,870	561,397	613,502
Malt (non-alcoholic)	61,057	—	—
Mineral water	92,688	—	—
Purified water	27,233	—	—
Soft drinks	696,000	600,000	622,000
Fruit juices	12,000	48,300	83,000
Wine	11,533	12,374	12,656

¹ Estimated.

augmenting the production of 10 1,000 per minute lines.

The beverage sub-sector appears to be the area most inclined to purchase high-speed automated processing and packaging equipment. See Appendix A for a profile of Coca-Cola de Venezuela.

DAIRY PRODUCTS MANUFACTURING

Production figures for major dairy industry products are shown in table 7. There are two important firms in the dairy industry. Industria Lactea Venezolana, C.A. (INDULAC), the Venezuelan affiliate of Nestle and the Borden Company, handles processing and distribution of liquid milk products. Its affiliate company Industrias de Perija C.A. (ILA-PECA), produces powdered milk.

Grupo Empresas Club, on the other hand, controls Helados Club (ice creams, sherbets, and other water-based frozen desserts), Concentrados Nacionales (fruit pulps and juices), Condimix (condiments), and Venezolana de Sabores y Aromas S.A.—VENSABOR. VENSABOR produces spices and various flavors for both industrial and consumer use. It is also a manufacturer's representative and distributor of various makes of food processing and packaging equipment. A third important firm, Productos EFE, S.A., is profiled in Appendix A.

Although there are numerous small companies in this sector, it is estimated that four large companies account for approximately 75% of total sales. Capital investment in this sector is estimated at \$8 to \$10 million dollars per year.

Table 7.—Dairy industry production, 1972–73
(in metric tons)

	1972	1973
Raw milk	1,048,571	1,023,200
Pasteurized milk	330,604	329,200
Powdered milk	54,401	54,122
Butter	6,290	6,385
Cheese	16,302	16,415
Ice cream and ice milk ¹	9,488	—

¹ Estimated.

Source: Anuario Estadístico Agropecuario, 1973, Ministerio de Agricultura y Cría, Caracas, October, 1974.

Estadísticas Industriales, 1972. Dirección General de Estadística y Censos Nacionales, Ministerio de Fomento, Caracas, August, 1974.

PACKAGING METHODS

Tinplate, glass, paper, and plastics are the primary packaging materials used in Venezuela. Material applications generally correspond to U.S. patterns.

Almost all fresh meat goes in bulk, unpackaged, from slaughterhouse to wholesaler to retailer. Plastic and—to a much lesser and diminishing degree—paperboard trays and plastic overwrap are used to

package meat for the retail buyer. As in their U.S. counterparts, Venezuelan supermarkets have largely moved away from custom butchering. Processed and preserved meats are generally packaged in tinfoil. Refrigerated luncheon meats are packaged in plastic. Eggs are packaged almost exclusively in plastic twelve-pack nesting containers.

Polyethylene coated paper predominates in the packaging of milk, milk derivatives, ice cream, and juice drinks. Powdered milk is used widely in Venezuela and is packaged in tinfoil containers of various sizes. Except for dried fruits, which are packaged in flexible plastic, almost all preserved fruits, fruit juices, and vegetables are packaged in tinfoil. Industrias Yukery C.A., a major fruit juice processor, is now packaging a part of its output in plastic pouches supplied by the French company Doy. Montana Grafica C.A., a major packaging materials converter, was reported to manufacture similar pouches, using the technology of the German firm Jenko.

High tinfoil costs are noted as the primary reason for interest in conversion. Dehydrated soups and some fruit-flavor based drink concentrates are packaged in foil envelopes. Glass containers are used for such items as jams, jellies, peanut butter, baby foods, etc. Flour and sugar are packaged in unbleached kraft, with some producers using bags with transparent plastic windows to reveal product purity. Beans, rice, pasta, etc., are now almost universally packaged in plastic bags. Oatmeal and other processed cereals are packaged in paperboard. The local affiliate of Quaker, Productos Quaker C.A., is packaging these and its flavored milk based beverages concentrates in plastic containers. To a large degree, bread and other bakery products are now packaged in plastic. Cookies, crackers, and similar products are also sold in large tinfoil cans. Fats and oils are increasingly being packaged in plastic, although some glass bottles are still used:

Tinfoil cans have recently made some inroads on glass bottles for beer and soft drinks, even though tinfoil containers are much more expensive. Canned soft drinks, for example are more than twice as expensive at retail as bottled drinks having roughly the same volume capacity. The one-way bottle is unknown in Venezuela. Reportedly, all carbonated beverage aluminum "snap-top" lids are imported from the United States and then incorporated with the Venezuelan tinfoil can body.

Preserved seafoods are packaged in tinfoil, except for dried and salted fish, which are sold in plastic bags.

Prices of all packaging media have undergone substantial inflation in the last several years, with tinfoil and kraft paper being hardest hit.

Dominguez & Yor, Cia., Envase Venezolana, and Envases Metalicos convert an estimated 70% of the total 110,000 tons of Venezuelan annual demand for tinfoil, with the balance being imported. Owens-Illinois and PRODUVISA are the two major Venezuelan glass manufacturers. These two companies have been unable to keep pace with demand, and continued glass container imports only partially alleviate supply scarcity problems.

There are several Venezuelan producers of kraft, linerboard and corrugated media, but no local paper and pulp production. A 134,000-ton pulp mill budgeted at \$165 million, is however, in the planning stage, to be built in 1977 by Corporacion Venezolana de Guyana. In 1974 linerboard capacity was an estimated 70,200 tons, corrugated medium capacity 24,245 tons, and kraft paper (for snacks and bags) capacity 75,990 tons. Sugar cane bagasse and waste paper are used locally to supplement pulp imports. The cost of corrugated paper is one motivating factor in the search for an all-plastic carton for cans, eliminating even the corrugated 24-can tray now used in conjunction with the shrink film overwrap (and shrink-collar six-pack) by beer and soft drink manufacturers. Where adaptation is possible, plastics seem to be gaining from these cost and availability considerations.

While Venezuela's plastics industry is growing and diversifying, low density polyethylene is still not locally manufactured in sufficient quantity. The trend toward Venezuelan production of a complete range of plastics, for packaging and other end uses, appears strong.

GOVERNMENT INVOLVEMENT

As indicated in the Agro-Industry chapter, the Venezuelan Government has channelled substantial resources to increase agricultural production in Venezuela. These efforts in themselves may be expected to have an important secondary effect on the FPP sector, and the consequent demand for FPP equipment and machinery. In addition, the Government is directing substantial capital to the food processing sector to enable Venezuela to process a larger proportion of its food requirements domestically, reducing imports, and broadening the country's export base. Following are some of the agencies involved in this channelling of resources.

The Fondo de Credito Industrial, or Industrial Credit Fund, was established in September 1974 with an initial capitalization of \$466 million. Through June 1975, approximately \$13.5 million of the Fund's resources had been invested in food processing, which they consider a "first priority" sector.

CORPOINDUSTRIAS, established by the Government to provide credit assistance to small and

medium scale industry, had a 1974 budget of \$917 million, and a 1975 budget of \$933 million. An important part of CORPOINDUSTRIAS' budget is being invested in food and animal feed processing projects.

INPRO, an autonomous Government entity dedicated to improvement of industrial productivity, had budgets of Bs. 6 million and Bs. 7 million in 1974 and 1975, respectively. The food processing sector is a beneficiary of INPRO's investment activities. Projects under study by INPRO include the following:

- A plant to produce sausage and other processed meats
- A rendering and bone and meat meal plant
- A sausage casing plant
- A fish filet and smoked fish plant
- A copra drying plant
- A dairy products processing plant
- An industrial bakery
- A slaughterhouse
- A plant to produce grapefruit juice and related products

Regional development organizations have also been given an important development role in Venezuela.

CORPOZULIA received 1974 and 1975 funding of \$2.3 million and \$10.5 million, respectively. Projects which are being promoted by, and which will receive at least partial funding from, CORPOZULIA include:

- A center for the storage and processing of plantain (\$240,000)
- A center for development of grape cultivation and processing (\$276,000)
- A center for the industrialization of yucca (\$858,000)
- A seafood processing project (\$277,000)

CORPOANDES received 1974 and 1975 funding of \$7 million and \$10.5 million, respectively. CORPOANDES agricultural activities planned include involvement in a \$12 million project to coordinate and expand cultivation and processing of hearts of palm.

CORPORIENTE had 1974 and 1975 funding levels of \$2.8 million and \$10.5 million, respectively. CORPORIENTE's projects include:

- A plant to produce cocoa butter and derivatives (\$1.6 million)
- A coffee processing plant (\$4 million)
- A grapefruit classification plant (\$2.1 million)
- A plant to process strawberries (\$235,000)
- A plant to process tamarind (\$404,000)
- A plant to process cashews (\$3 million)

- A vegetable processing and packaging plant (\$3.4 million)
- A tomato and catsup processing plant (\$913,000)
- A plant to process peanuts (\$6.2 million)
- A peanut oil extracting plant (\$2.5 million)
- A plant to produce precooked corn meal (\$9.3 million)
- A center for the industrialization of yucca (\$3.27 million)
- A dairy products plant (\$8.4 million)

CORPOCCIDENTE's funding was \$12.1 million and \$5.8 million in 1974 and 1975, respectively. CORPOCCIDENTES projects yet to be realized include:

- A vegetable dehydration plant (\$2.5 million)
- A tomato classification and packing plant (\$841,000)
- A fish meal plant (\$700,000)

Two Government sub-sector development investment funds, the Fondo de Cafe and the Fondo de Cacao were recently granted \$32.7 million, and \$11.7 million, respectively, by the Government. This money is to be loaned (at 8% p.a.) to cocoa and coffee growers and processors.

In addition to the projects identified above, the Government's investment in the sugar sector in the next 5 years, through Corporacion Venezolana de Fomento's Centrales Azucareros C.A. (CENAZUCA), will total an additional \$409 million. These plans are discussed in more detail in following pages. It should be expected that the Venezuelan Government will designate and sponsor additional food processing projects as agricultural production development programs begin to take effect.

The most important development projects related to the food processing sector are those for the sugar industry. The operative National Sugar Plan projects total Venezuelan sugar production as follows:

Year	Production (MT)
1975.....	552.4
1976.....	653.9
1977.....	739.6
1978.....	839.7
1979.....	963.9
1980.....	1,032.7

In the next 5 years, the Venezuelan Government, as part of the National Sugar Plan, plans to invest about \$300 million in the Government-owned sugar operations of CENAZUCA. About \$115 million will go for land preparation and farm infrastructure and \$166 million will be used for construction of new mills and refineries. The Plan also calls for Government investment in private sugar operations. The total projected ex-

**Table 8.—Sugar industry plant expansion programs
(exclusive of new plant construction), 1975–78**
(in thousands of U.S. dollars)

Mills	1975	1976	1977	1978
CENAZUCA				
Cumanacoa	5,558	2,920	1,326	465
Motatan	3,279	1,209	628	581
Tacarigua	7,279	1,140	—	—
Urena	2,512	1,140	140	—
Rio Turbio	9,162	4,721	1,395	465
Rio Yaracuy	8,860	4,232	1,837	—
CORPORIENTE				
Central Ribero	3,023	4,395	3,000	1,930
MIXED PUBLIC/ PRIVATE CAPITAL MILLS				
Central Santa Maria	3,698	5,930	3,488	3,023
Central Portuguesa	6,744	3,814	930	—

penditure for this phase of the Plan is expected to exceed \$100 million, with \$86.4 million going for land preparation and farm infrastructure, and \$20.7 million to be used for plant construction. Altogether then, the National Sugar Plan calls for investments of over \$400 million in both private and government-owned sugar operations. Of this total, \$60 million will be used for the expansion of existing plants and \$127.9 million will go into the construction of new plants which include

	Tender date	Estimated cost (in millions of U.S. dollars)
Central I (Las Majaguas, Portuguesa State)	7/75	35
Central II (Achaguas, Apure State)	6/76	35
Central III (Cojedes State)	3/77	35

Apart from the Government's plans for construction of new sugar mills, detailed in table 8, three private mills are in the planning stage. They are:

Mill	Satte	Daily capacity (metric tons)
Central Carora	Lara	4,000
Central Rio Guanare	Portuguesa	4,500
Central Pie de Monte	Portuguesa	4,500

These mills are to be built by 1977. Exact investment figures for these projects are not available, but a good estimate might be \$60 million.

Table 9.—Markets for food processing and food packaging equipment 1973, 1974, 1975, and 1979
(in millions of U.S. dollars)

	Food and beverage processing equipment				Food and beverage packaging equipment			
	1973	1974	1975	1979	1973	1974	1975	1979
Imports	53	65	96	147	12	14	17	23
Domestic products	6	8	11	20	1	2	2	4
Exports	—	—	1	2	—	—	1	2
Market demand	59	75	106	165	13	16	18	25

MARKET SIZE

Venezuelan statistics are not sufficiently detailed to provide reliable import market size estimates for food processing and packaging equipment. Venezuelan data, as well as data compiled by the U.S. Department of Commerce, were used as a basis for the estimates shown in table 9.

The unusually large increase in projected 1975 food processing equipment imports represents normal growth, plus the value of equipment to be imported for the construction of a \$35 million sugar mill. Total 1972 FPP imports were similarly affected by large purchases for sugar milling and refining equipment. Estimates for 1979 assume substantial realization of food processing sector investments by autonomous Government development agencies, and a continuing trend toward automation.

As will be noted from the statistical tables to be found in Appendix A the U.S. share of total imports for most categories of FPP equipment ranges between 40% and 60%. It is likely that this market share will remain stable, or perhaps improve slightly, during the next several years.

THE VENEZUELAN FPP EQUIPMENT MANUFACTURING INDUSTRY

For the present, Venezuelan production of food processing and packaging equipment is unimportant in relation to national demand. Among the Venezuelan firms in the FPP equipment field are:

Euro-Forni de Venezuela C.A., Centro Industrial Este, Guarenas, Venezuela.—This firm specializes in bakery machinery primarily for small neighborhood bakeries. Euro-Forni makes ovens, mixers, molders, and other equipment used by such operations.

Gaza C.A., Caracas, Venezuela.—This firm makes mechanical bag filling machines, but its annual output is presently quite small.

Empaques Hercules C.A.—Hercules manufacturers machines for forming and filling pillow-packs for sugar, cereal, pasta, and coffee. Hercules' prices and quality are reported to be competitive with imported makes, and one trade source estimates that

Hercules' market share for this type of equipment may be as high as 50%.

An industry source was able to offer this estimate of price comparisons for a pillow-pack former and filler with a capacity of 38-40 kilo packages/hour:

General Pkg. Equip. (U.S.)	\$3,100
Empaques Hercules	\$3,100
Empac (Colombian)	\$3,500
General Pkg. Equip. (U.S.)	\$5,200
Empacomatic (Mexican)	\$5,400

Lavko C.A.—Lavko manufactures liquid filling equipment for pharmaceutical and cosmetic products, but is reportedly considering diversification into some lines of equipment for the food industry.

There are various other firms, which could be characterized as job shops, that make some items as a sideline that are used by the food industry: Storage tanks, stainless steel tanks, liquid pumps, conveyor systems, piping systems and other structural metal items are fabricated or assembled by a variety of local firms.

One such firm, *Herrera y Rigal C.A.* of Barquisimeto, specializes in structural work and fabrication of large steel pieces for the sugar industry.

It is not expected that national production of FPP equipment will increase to an important degree over the next few years. One factor which may stimulate the growth of the domestic FPP industry, however, is Venezuela's participation in the Andean Common Market. ANCOM plans have allocated the production of various types of machinery among its member countries under its First Metalworking Industry Sectoral Program. Production allocation details are still under negotiation. If Venezuela is assigned manufacturing rights for some FPP equipment, it could be expected that Venezuelan firms would respond to the opportunity to manufacture for the much larger ANCOM market. However, ANCOM allocation decisions are not likely to have a significant effect on the local market for several years.

COMPETITIVE POSITION OF U.S. EQUIPMENT

In general, U.S. brands of food processing and packaging equipment compete very favorably with equipment supplied from other countries. Distributors and end users consider that for most types of equipment the several major supplying countries are on fairly even footing, with no particular country's suppliers having distinct price or other marketing advantages.

Domestic production of FPP equipment is presently a very minor factor in the Venezuelan market. The small national market and the relatively high cost of local raw materials and imported com-

ponents, have handicapped the development of a Venezuelan FPP equipment industry. Tariff and non-tariff barriers (such as import licensing requirements) are not now an important factor, nor are they likely to become one until Venezuelan or ANCOM regional production increases appreciably. Thus any significant price advantage for domestically-produced equipment is not foreseen. Even though the Venezuelan Government offers import protection for other types of local production, Venezuelan firms have not yet felt it economically feasible to embark on important local production of food processing and packaging machinery given other manufacturing possibilities. When customs charges and higher freight costs for imported equipment are considered, the few items that are produced in Venezuela are considered price-competitive with imported goods.

A factor frequently cited is that price itself may have a secondary role in the purchase decision. Process requirements of the end user and the adaptability of the needed equipment appear to be the most important variables.

All other things being equal, equipment from the United States, or produced by U.S. multinational suppliers (including from an overseas plant), is preferred over equipment from third country suppliers. However, an important factor in this regard is the connection that the end user may have with operations outside of Venezuela. Many industrial operations in Venezuela are, (or were once) affiliated with, foreign companies either as subsidiaries, partners, or licensees. When this is the case, the local plant will usually have been constructed using a design of the foreign company, and in many instances the plant may have been set up using an entire package of machinery and equipment contracted for by the foreign firm. In this case, the machinery in use will often have come from the country of the foreign firm, and the local firm frequently will continue to use that type of equipment either out of necessity or familiarity with it.

Another determinant of source preference for machinery is the national origin of the management. Many firms in the food industry, particularly the smaller ones, are operated by immigrants to Venezuela, most of whom come from Europe. The owners of these firms also tend to use equipment with which they are familiar. This is particularly true in the bakery industry, where many of the firms are owned and operated by Italian immigrants. Italy therefore remains a leading supplier of equipment to this sub-sector.

As mentioned previously, process requirements are a major factor in the purchase decision. A situation encountered in several end-user sectors is that U.S. equipment is considered too specialized

or automated, not designed for shorter and slower production runs that are prevalent among food processing and packaging operations in Venezuela. The most widely-used types of machinery continue to be basic items that are required at the intermediate stage of food industry development. Automation of the Venezuelan FPP industry is considerably less advanced and widespread than in the United States.

Another interesting factor noted during the survey is that for certain types of equipment in general use throughout the industry there appears to be an active market for used machinery. Two or three distributors or brokers specialize in used equipment, either importing such equipment or buying excess equipment from local firms. At least one New York broker is active in supplying the Venezuelan market with used U.S. equipment.

In general, sales development and marketing practices of third-country suppliers are similar to those of U.S. suppliers. Most FPP equipment is, in fact, handled by local distributors who may carry items from the United States as well as from third-country suppliers. The end user is therefore approached with the same sales technique for all equipment, regardless of its origin.

It does appear, however, that in many cases third-country suppliers are notably more willing to offer "convenient" terms and credit arrangements than U.S. suppliers. This is particularly true in the case of large contracts. The most dramatic recent example of this involved two new turnkey sugar mills purchased by the Government-owned (CVF) sugar company, Centrales Azucareros C.A. Both Mirrless Watson of the United Kingdom and MAUSA-Dedini of Brazil won out over U.S. bidders. MAUSA-Dedini won orders for two new mills, and Mirrless Watson obtained contracts for nearly \$10 million worth of sugar refining equipment. In both cases, a combination of lower prices, longer payment terms and lower interest rates was critical in awarding the business to non-U.S. firms. Repayment terms as long as 12 years, with interest rates as low as 7%, were reportedly offered to obtain these contracts.

Switzerland, Germany, Italy, and the United Kingdom are leading suppliers to the confectionery industry in Venezuela, as is Italy to baking and Germany to packaging. In the case of confectionery, it appears that Venezuelan requirements for more general-purpose machinery (rather than U.S. machinery, which tends to be designed for long runs of a single item or for a single function) favors European suppliers. Switzerland is particularly strong in chocolate products processing machinery.

Primarily due to lower selling prices, Colombia has shown competitive strength in exporting corn grinders, and Mexico has gained a foothold in small capacity coffee mills and simple mechanical utensils.

West Germany has continued to make market inroads in packaging equipment with special strength in plastics. Venezuelan end-user equipment design compatibility is frequently mentioned here as an important factor. Important third-country suppliers represented in Venezuela are listed in Appendix B.

The relative speed and ease of buyer access to machinery parts and service can be an important factor in local purchasing decisions. In this regard, U.S. suppliers generally have a better reputation than other third-country suppliers. However, U.S. suppliers can continue to gain further market advantage by continually upgrading and expanding their service facilities in Venezuela.

A recurring complaint about U.S. suppliers relates to their lack of Spanish-language promotional and technical materials. This alleged deficiency can cause particular problems when service and maintenance is required, since an overwhelming percentage of maintenance personnel among local companies have little knowledge of English. Other foreign suppliers apparently do more commonly provide Spanish-language operating and repair literature. Not surprisingly, smaller or new-to-market U.S. firms were those most frequently criticized in this regard. There seems to be a consensus that U.S. suppliers could improve their market position if they were to become better-acquainted with Venezuelan operating processes and thus be more "in tune" with customer needs.

Future trends do point to more automation and higher-speed processing and packaging operations. A countervailing influence on this trend, however, is the Government's interest in maintaining high employment levels. A good example of this is the recent requirement that all elevators in public buildings, whether automatic or otherwise, be manned by an attendant.

While most larger Venezuelan firms have ample credit facilities available to them through local banks, supplier financing proposals appear to be a major factor the purchasing decision of medium and small size firms. Similarly, the Venezuelan Government frequently finances its own purchases, but supplier credits are important to the autonomous Government agencies.

The actual performance of U.S. exports of FPP equipment to Venezuela vis-a-vis that of our major competitors is shown in table 10.

Table 10.—Exports to Venezuela of major categories of food processing and packaging equipment by origin, 1972-74

(in thousands of U.S. dollars)

SITC No.	Item	Total ¹	U.S.	%	West Germany	Italy	France	U.K.	Japan	Sweden
718.31	Grain milling machines									
	1972.....	1,935	612	31.6	775	112	—	33	74	—
	1973.....	1,988	413	20.8	1,028	180	—	7	26	—
	1974.....	2,683	1,334	49.7	555	261	—	6	135	—
718.39	Food processing machines n.e.s.									
	1972.....	14,497	3,300	22.8	487	1,118	81	8,728	19	—
	1973.....	6,753	4,231	62.7	606	861	19	378	2	—
	1974.....	9,604	3,716	38.7	890	1,151	25	3,202	34	—
719.15	Refrigeration equipment (nondomestic)									
	1972.....	13,487	11,524	85.4	97	561	356	9	4	38
	1973.....	17,545	15,346	87.5	27	264	499	22	4	115
	1974.....	24,292	21,159	87.1	103	529	423	1	—	—
719.19	Heating, cooling equipment n.e.s. ²									
	1972.....	16,005	8,244	51.5	2,713	2,711	597	957	21	49
	1973.....	9,457	4,899	51.8	1,305	1,428	277	203	300	146
	1974.....	17,574	7,912	45.0	3,304	2,913	1,313	146	40	8
719.21	Pumps for liquids									
	1972.....	14,622	9,035	61.8	3,262	680	216	860	9	—
	1973.....	13,450	9,002	66.9	1,690	905	132	596	24	—
	1974.....	17,539	11,359	64.8	3,283	722	252	1,019	24	—
712.23	Nondairy centrifuges									
	1972.....	6,725	4,523	67.3	895	123	131	420	19	—
	1973.....	6,204	4,009	64.6	751	188	79	216	30	—
	1974.....	8,201	6,001	73.2	877	267	91	262	9	—
719.63	Weighing machinery									
	1972.....	1,610	1,099	68.3	295	89	7	43	7	7
	1973.....	1,586	1,058	66.6	282	87	72	20	7	—
	1974.....	2,513	1,312	52.2	773	178	24	89	38	—
719.62	Packaging filling machinery									
	1972.....	7,843	4,586	58.5	1,405	661	166	270	38	28
	1973.....	10,160	5,221	51.4	3,403	537	300	314	22	37
	1974.....	13,675	8,185	59.9	3,226	920	272	299	63	76
719.31	Lifting, loading machines ³									
	1972.....	34,439	13,741	39.9	2,493	5,025	8,237	363	445	237
	1973.....	35,800	14,732	41.1	5,533	6,887	2,302	403	1,879	516
	1974.....	41,861	23,194	55.4	3,812	7,300	2,054	1,309	755	456
718.29	Printing machines n.e.s. ⁴									
	1972.....	6,589	2,968	45.1	1,502	707	91	631	253	101
	1973.....	7,914	3,926	49.6	1,499	692	108	1,194	131	174
	1974.....	9,471	3,788	40.0	3,500	984	203	458	178	162

¹ These totals include exports from all fifteen supplier countries covered in the original tabulation.

² Excluding: gas generators, air conditioning equipment, burners, mechanical stokers, and nonelectric industrial furnaces.

³ Excluding fork-lift trucks, etc.

⁴ Excluding typesetting and making, and bookbinding machinery.

Source: U.S. Department of Commerce, Bureau of Economic Analyses (computer printout) December 1975.

FOOD AND BEVERAGE PROCESSING AND PACKAGING EQUIPMENT WITH STRONG MARKET

Listed below are various types of food processing equipment with strong potential for sales to the three principal Venezuelan end-user sectors:

Sugar and Confectionery Production:

- Cane defibrators
- Crystallizing apparatus
- Crushing machines
- Diffusing apparatus
- Steam ovens
- Balances for the sugar industry

Evaporators
Centrifuges
Cocoa bean dehusking machines
Shaping machines
Tabletting machines
Chewing gum equipment
Specialized process equipment pumps
Texture testers
Recording thermometers for temperature cook cycles
Blenders
Sterilizing systems
Materials handling equipment

Dairy Products Manufacturing:

Butter-working/making machines
Homogenizers
Pasteurizers
Spray driers for preparation of powdered milk
Cheese-making machines
Ice cream preparation, freezing, cutting, and coating equipment
Condensers/evaporators
Refrigerated bulk cooling tanks
Compressors
Centrifugal milk clarifiers
Bag opening/dumping equipment
Specialized process equipment pumps
Sterilizing systems
Material handling equipment

Beverage Manufacturing:

Filtering machinery
Carbonating equipment
Concentration control equipment
Mashing vats with agitators and heating elements
Germination machines
Clarifiers
Straining vats
Specialized process equipment pumps
Compressors
Condensers/evaporators
Refrigerated bulk cooling tanks
Heat exchange systems
Sterilizing systems
Essence recovery systems
Recording thermometers
Materials handling equipment

Food and beverage packaging equipment with strong sales potential is listed below according to process involved:

Forming, Filling, and Sealing:

Vacuum thermoformers
Bottle and carton fillers
Heat sealers
Vacuum form/fill/seal systems
Pressure thermoformers

Injection blow molders
Thermoplastic combination blow/fill equipment
Fillers for viscous products
Fillers for solids
Can closers, sealers
Corking equipment
Tying, sewing, and stapling equipment
Aerosol form/fill/seal systems
Pouch forming and filling systems

Wrapping and Packing:

Outer and overwrap wrappers
Shrink wrappers and tunnels
Multipackers
Cartoners

Marking and Inspecting:

Labelers
Coding equipment
Code/label inspecting equipment
Can wrappers
Imprinting/printing equipment
Weighers

Container/Product/Package Preparation Handling:

Box setting-up equipment
Palletizers
Feeding/orienting equipment
Stackers
Unscramblers
Unloaders

Other equipment that appears to have good sales potential in Venezuela is listed below.

Meat Processing:

Beaters
De-hairing machines
Molding machines
Compactors
Sausage stuffing machines
Bone choppers

Fruit and Vegetable Processing:

Dehydrating equipment
Juice extractors
Pulpers
Separators, vacuum and gravity
Vegetable graders
Fruit drying equipment
Cooling/freezing equipment
Paring machines
Washing machines
Strip cutters, slicers

Grain Milling:

Flour bleaching machines
Crushing machines
Flour or bran blending equipment
Grinders
Graders

Baking:

- Biscuit/wafer/cracker machines
- Enrobing machines
- Continuous process ovens

Fats and Oils Processing:

- Oil-seed crushers and grinders
- Margarine-making machines

Fish and Seafood Processing:

- Filleting machines
- Grinding machines
- Freezing machines

MARKET ACCESS

Trade Practices

Distribution Channels.—In Venezuela, foreign Food Processing and Packaging (FPP) equipment manufacturers generally sell through importing distributors who frequently are given exclusive country or area representation rights for a given brand. Most Venezuelan importers/distributors carry several complementary lines. Venezuelan subsidiary sales organizations of foreign FPP firms are rare.

In general, distribution channels are short, with the importing distributor selling directly to the end users. In addition to maintaining a sales force, larger Venezuelan distributors also provide maintenance and service facilities and employ engineers who are able to provide desired design and other technical advice to the client. Some major Venezuelan FPP equipment distributors sell various lines of equipment for other, i.e., non-food end-user sectors. Direct end-user import purchases are generally limited to very large projects, e.g., Government financed and operated sugar mills.

Generally, to save time, large customers who have had extensive dealings with a foreign manufacturer may occasionally import spare or replacement parts without the services of that manufacturer's Venezuelan distributors.

Sales Promotion Techniques.—FPP equipment sales promotion in Venezuela emphasizes personal sales calls. Customer visits which employ the use of catalogues and other promotional material to be left with the client are generally considered to be the most effective sales technique. As noted in an earlier section, Spanish language literature is much more effective than untranslated material. Media advertising, which is also widely used is usually done through placements in major newspapers and industrial journals.

Radio and TV spots, and direct mail campaigns are used only rarely for sales promotion of FPP equipment.

Exhibition Attendance.—Venezuelan attendance at international food processing and packaging equipment exhibitions appears to be only moderate. Time and cost considerations were frequently mentioned as the primary reasons for infrequent attendance.

Most buyers of imported equipment seem content to attend occasional exhibitions in Venezuela. Local exhibitions generally have the advantage of offering a broad, multicountry selection which facilitates comprehensive comparisons.

A similar attitude regarding exhibitions seems to be held by FPP trade associations. However, FPP associations advise that when relevant information about exhibitions is made available to them it is passed on to their members.

An important Venezuelan association, Camara Venezolana del Envase, actively publicizes news of foreign exhibitions related to packaging equipment. The association journal, *Envase & Embalaje*, is published five times per year. It has a national circulation of 5,600 and regularly carries a listing of major exhibitions throughout the world, as well as advertising related to specific exhibitions. At the present time no food processing trade journals are being regularly published.

Trade Events.—An important international exhibition of packaging equipment took place in Caracas June 21–29, 1975. The exhibition was sponsored by the Chamber of Venezuelan Packaging Industries (Camara Venezolana de Envases). The editor of *Envase & Embalaje*, Miguel Diaz Hernandez, was the coordinator for the exhibition, which was the first of its type in several years. Among the 140 exhibitors, packaging material converters and manufacturers were most numerous, with representatives of equipment manufacturers and container manufacturers somewhat fewer. Only a few food processing equipment representatives were present. Reflecting a trend which has earlier been commented on, plastics packaging equipment seemed most popular.

Most exhibitors sold all the equipment brought for display, and sales of an Italian contingent totalled nearly \$4 million. This exhibition will reportedly be staged again in mid-1977.

As a rule, each of the trade associations listed in Appendix C holds an annual or bi-annual meeting; however, association sponsorship of exhibitions is rare. When such an exhibition is presented, pre-planning is usually done only a few months before the event.

Foreign Government-sponsored exhibitions are frequently held in Venezuela, with between six to eight events held during an average year. In late 1974, for example, both Brazil and West Germany sponsored industrial shows in Caracas. In contrast

to exhibitions abroad, Venezuelan attendance at local shows is good.

Buyer Identification.—The U.S. Department of Commerce maintains an extensive listing of Venezuelan representatives of foreign FPP manufacturers, as well as important Venezuelan food and beverage processors.

TECHNICAL STANDARDS

The Venezuelan Government has not imposed technical or labeling requirements for food processing and packaging equipment. The Venezuelan Industrial Standards Commission (COVENIN) is a Government agency which is in the process of establishing industry standards for nationally produced products. COVENIN has authority to grant the Norven (Normas Venezolanas) seal of approval, which endows the product with preferential consideration by Government agencies and institutions in purchasing decisions.

COVENIN's determinations are influenced by an advisory group made up of private sector enterprises. The advisory group is called Fondo para la

Normalizacion y Centrifcacion de la Calidad, a sub-organization of the Venezuelan Industry Council (CONINDUSTRIA). Venezuela's entry into the Andean Common Market may accelerate development of product norms. The head of COVENIN maintains that increased trade among members of the Andean Common Market increases the need for coordinated technical norms.

The Ministry of Health establishes technical requirements for the installation and operation of food processing and packaging equipment. These requirements are concerned with sanitary conditions and generally do not relate to the equipment itself.

Power and Measurement

The electrical system in Venezuela is 110/220 volts, 60 Hertz, one or three phase, and the electrical energy supply is generally reliable and stable.

Venezuela's official standard of measurement is the metric system. It is desirable that gauges and other measuring devices incorporate metric and centigrade scales. Much of the equipment presently in use in Venezuela is equipped with U.S. scales, which are generally understood.

APPENDIX A. PROFILES OF SELECTED FIRMS IN THE SUGAR AND CONFECTIONERY, BEVERAGE, AND DAIRY PRODUCTS INDUSTRIES

Sugar and Confectionery Manufacturing

CENTRAL EL PALMAR S. A.

As mentioned previously, this mill is part of the Vollmer Group. At the present time, El Palmar is the largest mill in the country and is considered to have the most modern operations of the traditional mills (this does not include Central Melaport).

El Palmar's production facilities are located in San Mateo, Arague State; its main offices, however, are located in Caracas. El Palmar's milling capacity is 6,500 metric tons of cane per day. In 1974, this amount represented approximately 13.8% of Venezuela's installed milling capacity.

Following is a description of El Palmar's component operations. Exact equipment installation dates were not available, but most of the equipment now being used is several years old:

Cane Handling: 70% of the incoming cane is handled with a chain conveyor system from stockpiles. The rest is unloaded from trucks directly into the plant's receiving hoppers. Equipment: two 60 ton automatic balances (Fairbanks-Morse); one 40 ton capacity hydraulic tip cart (Link-Belt); and one 20 ton and one 30 ton bridge crane (Man).

Grinding: Three cutting lines (all Farrel), one 500 hp with 12 chopping knives, one with 30 chopping knives powered by a 900 hp turbine engine (Elliott), one with 72 chopping knives, powered by a 900 hp Elliott turbine engine; six 38'' x 84'' mills (Farrell) each with a 1,000 hp turbine engine (General Electric); one balance (Merrick) with a capacity of 120 tons per hour.

Sugar kettles: Three kettles (Riley Stoker) each with a capacity of 135,000 lbs. per hour which generate steam at a pressure of 425 psi at a temperature of 750 degrees F. Two of the kettles can burn either bagasse or gas, the third burns only gas; one kettle (Combustion Engineering) with a capacity of 25,000 lbs. per hour generates steam at 450 psi at 750 degrees F.

Power Plant: Three turbogenerators (General Electric) one of which generates 5,000 KW and the other two 3,750 KW each; one 700 KW auxiliary generator (General Electric). All generate current of 160V/3 phase/60 Hz.

Purifying: Two automatic balances (Maxwell-Boulogne), rated at 140 tons per hour each; two

purifiers (Graver) 32'' in diameter with 5 trays, each with a capacity of 115,000 gallons; two filters (Oliver), one 8'' x 16'' and the other 8'' x 9''.

Warming pans and evaporators: Four warming pans, three with two stages and the other with one stage; two evaporators, each with five stages.

Sugar evaporators: Eleven evaporators, seven of which have a capacity of 1,500 cubic feet. Three are equipped with mechanical circulators of 100 hp. The four other evaporators have a capacity of 1,000 cubic feet each.

Condensers and cooling apparatus: Each evaporator has an individual sprinkler and jet action condenser system, one cooler, three injection pumps—two rated at 17,500 gpm each and one at 12,000 gpm—and three recoil pumps, each with a capacity of 17,000 gpm.

Crystallizers and granulators: Three crystallizers for the 1st and 2nd stages, and 14 crystallizers, with cooling unit, for the 3rd stage; five granulators, one for residuals. Each of these units has a rated capacity of 1,500 cubic feet.

Centrifuges: Eight automatic for the first and second stages (Western-States G-8), 48'' x 36'' and operated at 1,200 rpm, four for the first stage and four for the second; 17 centrifuges for the third stage (Western-States), 40'' x 30'' (BMA Model K-100), eight automatic refining centrifuges) operated at 1,800 rpm; four continuous purifying centrifuges (Western-States), 48'' x 30'' operated at 1,200 rpm.

Refinery: One continuous dissolver; one automatic system for phosphoric acid and lime treatment; five purifiers, four rated at 25 gpm (Jacobs) and one at 100 gpm (Sucrest); five 900 pc autofilters (Suchar); two security filters, one of 900 pc and one (Fas-Flo) of 500 pc; one 4,500 pc; one 4,500 pc triple treatment evaporator; two dryers (Buttner) with a total capacity of 900 tons/day.

Storage and packaging: Two hoppers for refined sugar with a total capacity of 500 tons; filling equipment of 50 kg and 5 lb. sacks, two filling machines (Hesser) for packages of 1 kg; and two 22,000 ton refined sugar storage bins.

Storage of cane juice: Two steel tanks with a capacity of 8,000 tons each.

Storage of molasses: Three steel tanks, one for 2,000 tons and two for 4,500 tons each. The two larger tanks can also be used to store cane juice.

INDUSTRIAS SAVOY S. A.

Savoy, an affiliate of Beatrice Foods, is the leading Venezuelan confections manufacturer, with approximately 80% of the market. The capacity of Savoy's plant is approximately 2,500 tons of product per month. Savoy produces over 200 different products on a regular basis, including chocolate-based items, "bon-bons" and hard candies. Major equipment components of the Savoy plant are listed below.

Chocolate processing: Pretoasters—two steam-operated (European)—25 years old. Cocoa grinding mills—one Baker Perkins (U.K.), two years old; one Drais (West Germany), 30 years old. Refiners—one Bramley (U.S.), 25 years old. Presses—two Carlo Montanari (Italy), 3 to 4 years old. Mixers—one Carlo Montanari, 4 years old. Five-cylinder refiners—three Bauermeister (West Germany), 4 years old, three Baker Perkins (U.K.), 15 to 20 years old. Large mixers for chocolate—three of 3,000 Kgs capacity, 5 years old, two of 1,500 Kgs., 20 years old, one of 2,000 Kgs., 15 years old, all Richard Frize (West Germany). Molding machines—two Carlo Montanari, 5 years old. Packaging machines—20 SIG (Switzerland), five are 2 years old, 10 are 10 years old, and five are 20 years old; 10 Otto Hansel (West Germany), ranging from one to 20 years old. Liquid pumps for chocolate—30 Bauermeister and Bindleiz units; most over 10 years old.

Caramel processing: Vacuum cookers—eight Hansel (West Germany) 5 years old; three Solvomat Hansel, 5 years old. Carmel formers—four Hansel, 15 years old.

Cracker processing: Ovens—six Hebenstreit, four 15 years old, and two 4 years old. This process incorporates ovens, refillers, cutters, and coolers.

Packaging machinery for caramels and crackers: Packers—one Olympia (U.S.), 1 year old; two Jean Ratti (France), 2 and 3 years old; three Otto Hansel, 15 years old; three Latcko (U.S.), 2 years old; and two Zamoni (Italy), 2 years old.

Auxiliary equipment: Truck pack tunnels (U.S.), 2 years old; seven Mira pack (U.S.) bag filling machines, 4 years old.

Savoy's cocoa processing plant (Granos de Oriente C.A.) is equipped with the following equipment. All are 10 years old.

Toasters—two J. Burns (U.S.) units; Huskers—two Bauermeister units.

Beverages Production Sector

COCA-COLA DE VENEZUELA

Coca-Cola has 14 bottling plants in Venezuela. It is the second leading producer of soft drinks in the country (Pepsi Cola ranks first). The Coca-Cola de Venezuela bottling plant described below is located in Caracas. It is typical of this firm's other plants in Venezuela. Capacity of the plant is approximately 3,000 gallons per hour. The process and equipment employed is described below.

Bottle Preinspection: Visual, using a conveyor system.

Unloading: One machine, George Meyer, removes bottles from the conveyor system.

Washing: One Meyer bottle washer cleans the bottles with a caustic soda solution. After cleaning, bottles are visually reinspected, using a conveyor system.

Proportioning: (Syn-cro-mix) one George Meyer machine mixes the water and syrup.

Carbonating: One machine, Mojonnier (U.S.), cools and carbonates the product.

Fillers: One Meyer filling machine, and a Crown (U.S.) capping machine.

The filled bottles are visually inspected on a conveyor system, and then placed in cases using a Meyer loading machine. All of the equipment in this plant is approximately 16 years old. Other equipment in the bottling plant is as follows:

- One C. Brook (U.S.) boiler
- One Tri Canada (Canada) syrup pump
- One Peerless (U.S.) water pump
- One Permutit (U.S.) water treatment plant
- One Toledo (U.S.) scale
- Six stainless steel 6,000 and 3,000 liter capacity tanks.

Dairy Products Sector

PRODUCTOS EFE S.A.

This company is the larger of the two major national producers of ice cream and related products. Its plants and offices are located in Caracas. EFE's processing plant currently has an estimated annual ice cream production capacity of 15 million liters. EFE's major processing equipment is as follows:

Weighing: Raw material is weighed with three scales, Berkel (U.S.), 7 years old.

Mixing: three 7-year old Mojonnier (U.S.) stainless steel tanks are used to mix and pasteurize

the products. Three Continental (U.S.) ovens are integrated with the mixing process, as is a Pfauler (U.S.) water treatment plant.

Homogenization: One Manton Gaulin (U.S.) homogenizer, 7 years old.

Cooling: One Paasch (Danish) cooler, (7 years old) which cools water to 0 degrees C.

Maturing process: Nine stainless steel tanks, Cherry Burrell (U.S.) and Mojonier (U.S.), all more than 7 years old.

Freezing: There are 14 freezer-mixers that are operated at a temperature of five degrees below zero, C. (22 degrees above zero F.)—five are

Cherry Burrell (U.S.), two of these 7 years old and three 2 years old; nine are Gram (Danish) and are more than 20 years old.

Filling machines: Two Gram (Danish) machines that are 2 years old and two Gram that are seven years old; two Anderson (U.S.) that are 2 years old. The four Gram machines make ice cream on sticks and fill carry-home containers. Two other Gram machines (age unknown) fill ice cream cones and containers. The two Anderson machines fill and seal paperboard containers.

Freezing room: One large refrigerated room, two years old, that incorporates Gram and U.S. equipment.

APPENDIX B. LEADING SUPPLIERS OF FOOD PROCESSING AND PACKAGING EQUIPMENT

Leading suppliers of equipment to the FPP sector are shown below according to end products.

Meat Products:

Gordon Johnson
Townsend Engineering Co.
North Star
American Can Co.
Continental Can Co.
Mapco
St. John & Co.
Liquid Carbonic

Dairy Products:

Cherry Burrell
Mojonier
Manton Gaulin
Gram
Anderson
Paasch
Pfauler
Continental Can Corp.
American Can Co.
Gillespie & Company
Creamery Package
Pure-Pak

Preserved Fruits and Vegetables:

FMC International
Impak
Amsco Packaging Machinery Inc.
Great Lakes Corporation
The Kartridge Pak Co.
Excello Corp.
Peter Mayer
Ferrostal

Grain Mill Products Sector:

Maig
Smico

American Can
Continental Can
Angelus Sanitary Can Machine Co.
Muller
Sprout-Waldron
Richardson Scale
Viserva
Martellos Hammar

Bakery Products Sector:

Oliver Machinery Co.
Doboy Packaging Machinery
Doman Industries Inc.
Hobart
AMF
Middleby Marshall
Anetzberger
Olive
Hansel
Zamoni
Carlo Montanari

Sugar and Confectionery Products Sector:

Mirrless Watson Co.
Gino Frau S.A.S.
Fletcher and Stewart Limited
Fives-Cail Babcock
Sucrest
Masau
Dedini
Ferrostall
Maig
Atlas
Demag
Farrel
Riley Stoker
Combustion Engineering
Western-States
Jacobs

Babcock Wilcox
Bristol
Baker Perkins
Drais
Bramley
Carle Montanari
Bauermeister
SIG
Hansel

Fats and Oils Processing sector:

French Oil Mill Machinery Co.
V.D. Anderson
Wurster & Sanger Engineering
Moskogee

Beverages Production Sector:

George Meyer
Mojonnier
Roblecar (Argentina)
Astral (Argentina)
Infilco
Miller Hydro
Barry Wehmuller

Standard Knapp
Cleaverbrook
MRM

Fish and Seafood Processing Sector:

American Can Co.
North Star
Gordon Johnson
Mapco
Liquid Carbonic

Other Food products Sector:

FMC International
French Oil Mill Machinery Co.
American Can Co.
Continental Can Corp.
V. D. Anderson
Howe-Richardson
Crown Cork & Seal
George Meyer
Riley Stoker
Hansel
Maig

APPENDIX C. PRINCIPLE TRADE ASSOCIATIONS

Asociacion Venezolana de Empacadores de Alimentos (food packagers)
Edificio Ciemi, Piso 1, Oficina 5
Avenida Principal de Chuao, Chuao
Caracas, Venezuela
Pablo Arnoldo Lozada, Executive Secretary

Asociacion de Aguas Minearles y Potables (ANEDAMP) (distilled and mineral water)
Edificio Ciemi, Piso 1, Oficina 5
Avenida Principal de Chuao, Chuao
Caracas, Venezuela

Asociacion Nacional de Fabricantes de Hielo (ANFIELO) (ice manufacturers)
Edificio Ciemi, Piso 1, Oficina 5
Avenida Principal de Chuao, Chuao
Caracas, Venezuela

Asociacion de Industriales de Acietes y Grasas Vegetables Comestibles (ASOGRASA) (edible fats and oils)
Apartado Postal 50342
Unidad Comercial La Florida, Oficina 243
Avenida Avila, La Florida
Caracas 105, Venezuela
Leopoldo Correa, Executive Secretary

Asociacion de Industriales de Leche en Polvo (ASOLEP) (powdered milk)
Apartado Postal 61234
Edificio IASA, Piso 6
Plaza La Castellana

Caracas 106, Venezuela
Martin Velazco, Executive Secretary

Asociacion de Industriales de Panaderia y sus Derivados (bakery products)
Edificio Marciales, Piso 1, Oficina 14
Avenida Urdansta, Esquina Punceres
Caracas, Venezuela
Luis F. Ramirez, Executive Secretary

Asociacion Venezolana de Embotelladores (bottlers)
Edificio Ciemi
Avenida Principal de Chuao, Chuao
Caracas, Venezuela
Dr. Vidaure, Executive Secretary

Asociacion de Industriales Licoristas de Venezuela (liquor distillers)
Edificio Ayacucho, Piso 3, Oficina 6
Conde a Padre Sierra
Caracas, Venezuela
Elio Silva Orellana, Executive Secretary

Asociacion Nacional de Enlatadores de la Pesca (seafood cannery)
Apartado Postal 101
Edificio Camara de Industriales, Piso 5
Puente Anauco
Caracas 101, Venezuela
Angel Garcia, Executive Secretary

Asociacion Nacional de Industriales del Cafe
(coffee processors)
Apartado Postal 14255
Edificio Camara de Industrialese, Planta Baja
Puente Anauco
Caracas 101, Venezuela
Juan Arvelo, Executive Secretary

Asociacion Venezolana de Molinos de Trigo
(flour millers)
Edificio 42, Piso 1
Coliseo a Peinero
Caracas, Venezuela
Luis A. Anez, Executive Secretary

Asociacion Venezolana de las Industrial de Sales,
Condimentos y Similares (salt and spaces)
Edificio 42, Piso 1
Coliseo a Peinero
Caracas, Venezuela

Asociacion Venezolana de Fabricantes de
Alimentos Concentrados para Animales
(animal feeds)
Apartado Postal 1245
Edificio Karam, Oficina 212
Ibarras a Pelota, Avenida Urdaneta
Caracas 101. Venezuela
Juan Moreno Gomez, Executive Secretary

Asociacion Venezolana de Pasteurizadores de
Leche (milk pasteurizers)
Torre Lincoln, Pent House A
Avenida Lincoln, Sabana Grande
Caracas, Venezuela
Orlando Alvarez Perera, President

Camara Venezolana de Fabricantes de Cerveza
(brewers)
Edif. Ciemi
Avenida Principal de Chuao, Chuao
Caracas, Venezuela
Jesus Fuenmayor, Executive Secretary

Camara Venezolana de Licoristas (distilled
liquors)
Edificio Bompland, Piso 1, Oficina 103
Gradillas a Sociedad No 15
Caracas, Venezuela
Francisco Perez Senini, Executive Secretary

Asociacion Venezolana de Industrias Plasticas
(AVIPLA) (plastics)
Edif. CIEMI, Piso 1, Oficina 7
Avenida Cafetal, Chuao, Caracas, Venezuela
Dr. Gerardo Hernandez Parra

Asociacion Venezolana de Productores de Pulpa,
Papel y Carton (APROPACA) (pulp and paper)
Edificio Camara de Industriales
Piso 6, Esquina Puente Anauco
San Bernardino, Caracas, Venezuela
Dr. Reinhard Hellmund

Camara Venezolana del Envase (packaging)
Edif. Camara de Industriales
Piso 2, Letra B
Esquina Puente Anauco
San Bernardino, Caracas, Venezuela
Dr. Luis C. Hueck G.

4 The Petroleum Industry

Venezuela is the fifth largest producer of oil in the world. It had an output of 1.1 billion barrels in 1974. This amount represented 5% of total world production. The country's known oil reserves comprise 3% of world reserves.

In 1974, petroleum accounted for 39% of Venezuela's gross national product, an increase from 19% in 1972 and 23% in 1973. Oil revenue accounted for 86% of government income in 1974, up from 70% the preceding year. In 1974, government receipts totaled \$6 billion, quadruple the level of 1973. Price rises and tax adjustments were largely responsible for this increase. As a founder and member of the Organization of Petroleum Exporting Countries (OPEC), Venezuela follows the group's decisions about prices. The Government has not applied any embargoes, however, and has categorically stated that it will not levy any in the future.

Oil exports are a primary source for Venezuela's foreign exchange reserves. Petroleum, in all its forms, accounted for 96% of total exports in 1974, a 2% increase from 1973. Revenue from oil exports totaled \$9.4 billion in 1974 compared with \$3 billion in 1973. The United States is the principal destination for most of the country's oil exports and accounted for almost 35% of direct exports in 1974 and 1975.

The nationalization of the oil industry, a move which ended 62 years of private foreign control of Venezuela's principal resource, has dominated the petroleum sector in the 1974-76 period. Shortly after President Perez assumed office in March 1974, he declared that the oil concessions would revert to the nation earlier than their beginning expiration dates in 1988. The law, passed August 29, 1975, reserved to the Venezuelan State the operation of the petroleum industry. It stipulated that nationalization would become effective on January 1, 1976, allowing 4 months to organize the nationalized industry and reach agreements with the foreign oil companies for their continuing participation. Na-

tionalization has proved to be an intricate process in Venezuela because of the oil industry infrastructure—more complex than that of any other OPEC member.

It is generally recognized that Venezuela has the capability to operate its own oil industry. Foreign technicians make up less than 3% of the work force. However, the Government does need to retain access to the technology and markets that the private companies control and has sought arrangements with the companies to that end.

Many of the doubts about the success of oil nationalization center around the Government's inexperience in important areas such as marketing. Technical service contracts formed by the Government and the old owners have been designed to alleviate many of the problems which arise from such inexperience. Marketing and related services, in fact, represent the best long-term opportunities for U.S. businesses.

PETROVEN

Born full-grown as one of the major oil companies in the world, *Petroleos de Venezuela* (PETROVEN) began administration of the country's oil industry with a net worth of \$2.1 billion, counting the assets of the nationalized oil companies at the official indemnization figure of \$420 million. It inherited some 8.3 million acres of oil concessions; 12 refineries including the former Exxon Amuay installation, one of the world's largest; 14 oil tankers; 131 gas injection plants; over 6,000 miles of oil, gas, and multipurpose pipelines; about 3 million barrels per day (bpd) of crude oil production capacity, together with 122 million barrels of storage capacity; and a work force of 23,600. An estimated 525 foreign technicians initially remained with the nationalized industry.

PETROVEN has a mandate to carry out a rationalization and consolidation of the petroleum industry. In place of the 22 concessions and some

40 companies involved in the industry prior to nationalization, PETROVEN began with 14 operating companies. A list of names of the new companies, the names of the former concessionaires, and addresses follows.

- AMOVEN (Amoco)
Edificio IBM
Apartado 61498, Caracas
- BOSCANVEN (Chevron)
Edificio a Estancia
Apartado 863, Caracas 101
- DELTAVEN (Texaco)
Edificio Deltaven
Apartado 267, Caracas 101
- BARIVEN (ARCO)
Edificio Atlantic
Apartado 893, Caracas
- CVP, S.A. (CVP)
Edificio Selemar
Apartado 14.057, Caracas
- GUARIVEN (S.A. Las Mercedes)
Edificio "Centro Avenida Libertador"
Apartado 1429, Caracas 101
- LAGOVEN (Creole)
Edificio Lagoven
Apartado 839, Caracas 101
- MARAVEN (Shell and Continental)
Edificio La Estancia
Apartado 809, Caracas
- PALMAVEN (Sun and Charter)
Edificio Seguros
Venezuela
Apartado 60.523, Caracas
- LLANOVEN (Mobil)
Edificio Llanoven
Apartado 61.373, Caracas 106
- MENEVEN (Mene Grande, i.e., Gulf, IPC,
and Shell)
Edificio Meneven
Apartado 709, Caracas
- ROQUEVEN (Phillips)
Edificio La Estancia
Apartado 1031, Caracas
- TALOVEN (Talon)
Edificio Centro Libertador
Apartado 61.383
- VISTAVEN (Mito Juan)
Edificio Centro Commercial
Cayorma
Apartado 6658

Former concessionaires will act as purchasing agents for the nationalized operating companies under technical service contracts awarded in conjunction with offtake contracts. Exxon has already announced that it has established this service for LAGOVEN and that purchasing will be handled through the Houston headquarters.

The 14 companies are expected to operate in much the same fashion as they did when they were privately owned. Staffs were retained intact, with the exception of the boards of directors, all of whom must be Venezuelans, and a few individual cases where key company executives were moved into the PETROVEN administrative team. Each operating company's minimum production level will be the volume of oil that the former concessionaire agrees to lift in offtake contracts to be signed with PETROVEN. All former concessionaires are expected to sign offtake contracts in order to ensure that they receive technical service fees and in order to maintain their participation in the industry. With the exception of two or three companies, most offtake contracts will be for lesser first quarter 1976 volumes, because of resistance to the high price levels set by the Government. It is also planned that oil not denominated under offtake contracts, but available for export sales, will be marketed by only two or three of the larger operating companies, plus CVP.

In his first press conference of 1976, the Minister of Mines announced that henceforth PETROVEN would be given complete autonomy by the Venezuelan Government. Officially governed by an Assembly chaired by the Minister of Mines and Hydrocarbons, with other government ministers participating as designated by the President, the company has a nine-man board of directors. The four members designated as full-time employees are empowered to form an executive committee to act on behalf of the full board when it is not in session. PETROVEN conducts its business through a series of committees on which the board members serve, and through a system of coordinators who keep the board informed on each operating company. The presidents of the operating companies meet monthly with the PETROVEN board.

A period of adjustment is in store for PETROVEN, which as of March 1976 was not fully staffed. The public needs to be assured that the oil industry is functioning normally, the workers that their benefits are protected, and the press that planned production and export levels will be achieved. There are continuing great demands on the time of the small cadre of senior people who administer PETROVEN. But, there is every indication that the nationalized industry is being professionally managed.

Table 1.—Oil industry operating area, production, refining capacity, and number of employees by company, 1975

Company	Former concessionaire	Operating area (thousands of hectares)	Production (thousands of bpd)	Refining capacity (thousands of bpd)	Number of employees
AMOVEN	Amoco	5.5	26.8	—	40
BARIVEN	ARCO	22.3	23.1	45	274
BOSCANVEN	Chevron	56.4	38.0	61	353
CVP S.A.	CVP (state company)	1,046.9	42.9	25	3,169
DELTAVERN	Texaco	159.8	72.7	10	840
GUARIVEN	Las Mercedes (private company)	89.7	2.4	—	115
LAGOVEN	Creole (Exxon)	357.1	997.8	740	7,816
LLANOVEN	Mobil	157.4	58.1	106	857
MARAVEN	Shell (& Continental)	252.0	545.9	404	6,161
MENEVEN	Mene Grande (Gulf, IPC, Shell)	728.3	373.3	159	2,793
PALMAVEN	Sun (& Charter)	23.3	126.0	—	412
ROQUEVEN	Phillips	33.9	31.1	4	618
TALOVEN	Talon (private company)	60.2	3.1	—	87
VISTAVERN	Mito Juan (private company)	47.2	3.9	—	80
Venezuelan Government	.....	—	1.1	—	NA
Total	.....	3,040.0	2,346.2	1,554	23,615

Source: *Petroleum Industry Development and Outlook*, DIB No. 76-03034, March 1976.

Some basic decisions as to the degree of integration of each operating company remain. For example, it has not been decided whether the planning and public relations function will be centralized during the initial 2-year period. The individual companies can be expected to take the initiative in developing annual operational plans for production and proposing new investments. They will pay 10% of net revenue to the holding company, as well as oil income tax and royalties at the same rates as did the private companies. This revenue-producing function is intended to strengthen the companies in their efforts to maintain the efficiency of operations.

In mid-November 1975, PETROVEN announced that it planned to invest \$549 million in the petroleum industry during 1976. LAGOVEN, the largest operating company, will account for \$115 million of this investment. CVP has programmed \$124 million in capital expenditures. These two companies, thus, are scheduled to carry out almost 44% of investments during the first year.

At the time of the takeover, a \$110-million Guaranty Fund was established, which may be drawn upon to renovate equipment and dormant oil installations. PETROVEN's basic revenue of 10% of the operating companies' net income will not be sufficient to make major investments for upgrading the refinery industry, producing the heavy oil in the Orinoco zone, and undertaking a major new exploration effort. Estimates on the total to be spent range from \$3.3 billion to \$5.8 billion over the 1976-81 period. More exact data will depend heavily upon the decisions made in formulating the Fifth Development Plan.

Petroleum Institute

As a first effort to mobilize domestic oil technology, and thus meet one of the objectives of the Fifth Development Plan, the Council of Ministers approved the establishment of the Venezuelan Institute of Petroleum Technology in January 1976. It is anticipated that initial funds of \$23 million will be included in the 1976 budget to begin this project. The Institute will be located on or adjacent to the Simon Bolivar University grounds in Caracas and will be constructed in stages over a 10-year period. It is not envisioned as a training institute; rather, it will bring together the existing professional talent for the purpose of developing technology for the oil industry. By 1985 it is planned that as many as 1,000 Venezuelans will be involved in the program, with laboratories and testing facilities functioning fully.

INDUSTRY PROFILE

Production

Production of petroleum averaged 2.3 million bpd in 1975 (see table 1), a 21% decrease from the 1974 average of 2.9 million bpd. Decreases in production are attributable to the Venezuelan Government's mandate to reduce the oil inventories it had agreed to buy on December 31, 1975. Higher oil prices in 1973 and 1974 permitted the Venezuelan Government to begin a long-desired oil conservation program.

In 1974, 172.7 million cubic meters (m³) of crude were produced (see table 2). Due to decreases in

the production of light crude oils, the average API gravity for that year was 25 degrees. Approximately 51.2 million m³ fell in the 0-degree to 22-degree API range, 65.3 million m³ of 22.1-degree to 30-degree API, and 56.2 million m³ of 30 degree API and over.

Oil production peaked in 1973, and revenue from the oil sector reached its high point of \$8.5 billion in 1974. Production and revenue have declined steadily since. Revenue for 1975 was under \$7.5 billion, and the projections for 1976 are around \$5.7 billion.

The main producers during 1974, as in prior years, were Creole Petroleum (Exxon), Shell, Mene Grande Oil Co. (Gulf), and Venezuelan Sun Oil Co. The first two companies were responsible for 68% of total production in that year, and the four of them accounted for 86%.

The large bulk of petroleum comes from the western states of Zulia and Falcon, with 19.5% from the eastern basins and 1.7% from other areas. The major basins are Maracaibo, Oriental, Apure, and Falcon. In 1974, there were 12,253 crude oil and 60 gas wells in production. About 8,211 wells were shut in; another 8,208 were considered abandoned.

Natural Gas

Approximately 46 billion m³ of natural gas was produced in 1974; almost half of it was reinjected. Output in 1974 represented a 6% decrease from the 1973 level in response to government conservation policies and the decline in oil production with which it was associated. In the first half of 1975, production of gas fell an even steeper 19%, or over 25 million m³ daily. The net oil-gas ratio averaged 756 cubic feet (ft³) of gas per barrel of oil in 1974. Over 21% of natural gas production, an approximate 9.9 billion m³, was vented in 1974. In the first half of 1975, there was a 60% reduction in the amount released into the atmosphere. Consequently, relatively more gas was utilized for consumption, and absolutely more was transformed into products, than in the previous year. Ultimately, the Venezuelan Government hopes to conserve 98% of gas production.

Natural gas reserves are estimated at 1.1 trillion m³. Venezuela's natural gas reserves have a theoretical life of 46 years and account for 1.8% of the world supply.

Production of other liquid hydrocarbons totaled 5.1 million m³ in 1974, including all those hydro-

Table 2.—Oil production by company and crude oil processed by refinery, 1973 and 1974
(in thousands of cubic meters)

	Oil production		Refinery	Crude oil processed	
	1973	1974		1973 ¹	1974 ²
Creole	87,992	77,710	Amuay	35,058	30,855
Shell	45,997	39,681	Caripito	653	990
Mene Grande (Gulf)	24,306	23,464	Cardon	19,531	17,962
Sun Oil	10,294	8,175	San Lorenzo	1,410	1,361
Mobil	4,668	3,640	NA	NA	NA
Chevron	2,671	2,806	NA	NA	NA
Texaco Mbo.	3,139	2,375	El Palito	4,805	5,449
Coro (Texaco)	362	264	Bajo Grande	2,551	1,639
Texas	2,416	2,190	NA	NA	NA
CYP	4,786	4,314	Tucupita	210	194
Phillips	2,639	2,434	Moron	1,168	839
Sinclair	1,608	1,428	San Roque	302	304
Amoco	1,784	1,567	El Chaure	2,252	1,882
Charter	849	704	Barinas	297	272
Continental	670	480	NA	NA	NA
Caracas	616	463	NA	NA	NA
Mito Juan	184	453	NA	NA	NA
Talon	191	219	NA	NA	NA
Las Mercedes	112	143	NA	NA	NA
La Nacion	—	64	NA	NA	NA
Varco	117	139	NA	NA	NA
International	—	—	NA	NA	NA
Vangref	NA	NA	Puerto La Cruz	7,185	7,490
Total	195,331	172,713	Total	75,422	69,237

¹ Does not include 146 m³.

² Does not include 167 m³.

Source: Ministry of Mines and Hydrocarbons Annual Report 1974, and Commerce Team information based on trade source estimates.

carbons obtained in natural gas treating plants, refineries, and gas compression facilities. Included were 3.4 million m³ of liquid petroleum gas (LPG), 1.3 million m³ of natural gasoline, and about 350,000 m³ of condensate. The 1974 production level represented a 5% decrease as compared with 1973.

At the end of 1974 there were 17 natural gas processing plants, including one new LPG plant operated by CVP at the El Tablazo Petrochemical Complex. Excluding production of the new plant, over 47 million m³ of gas and 4.6 million m³ of other fluids were processed daily. Approximately 3,700 m³ of natural gasoline, 4,200 m³ of propane, and 4,300 m³ of butane were output from the 16 plants in 1974. About 76% of the fluids obtained from these plants was exported.

EXPORTS

In 1974 the Western Hemisphere was the destination of almost 87% of the exports from Venezuela and the Netherlands Antilles. The United States took an average of 1.6 million bpd from these two sources, 10.5% less than in 1973. The other principal international markets, including Europe, also took less in 1974 than in the previous year.

Venezuela exported 94% of its extracted oils in 1974, about 325 million m³. Direct exports in that year approximated 162 million m³, of which crude petroleum accounted for 102 million m³; refined products, 56 million m³; and liquefied petroleum, the remaining 4 million m³. In 1973, the country's direct exports totaled 190 million m³ of oil—crude petroleum made up 123 million m³; refined products, 63 million m³, of which 85% was residual fuels; and other liquefied products, 4 million m³.

For the first 6 months of 1975, Venezuelan exports to the United States and the Netherlands Antilles declined approximately 3%. Direct exports to the United States remained at a level of 35% during the first 6 months of 1975, compared to the similar period in 1974, but the mix shifted significantly toward crude. Processed product exports to the United States accounted for 16% less of the total, and crude oil exports were 11% more than in 1974. For the first 8 months of 1975, overall oil exports to Latin America were down 14%.

There should be no drastic changes in Venezuelan marketing patterns in the next few years; this country should continue to be a secure source of supply for the United States. The Venezuelans want to sell more rather than less oil to U.S. buyers. The current U.S. pattern of increasing crude oil and declining product imports, however, runs contrary to the Venezuelan emphasis on maximizing refinery throughput and the resulting production of a large volume of residual fuel oil.

DRILLING AND EXPLORATION

Exploration activities have proven that Venezuela can be optimistic about its reserves. Many new areas have been found productive, and it is expected that oil and gas will be found in unexplored territories. The proven oil reserves figure was adjusted upwards at the end of 1974 to include 4.8 billion barrels that could, for the first time, be economically produced at the prevailing world prices. The new reserves figure was given as 23.4 billion barrels. A technical paper presented at a geology forum held in Maracaibo in September 1975 estimated that PETROVEN will need to develop 803 million barrels of new reserves each year in order to maintain a production level of 2.2 million bpd. An additional 43 million barrels per year will have to be found to compensate for declining traditional oil structures.

A total of 407 wells was drilled in 1974, the fewest since 1968, of which 338 were developmental and outpost and 68 were exploratory. Of these, some 47 were dry wells. In 1975, 324 wells were completed, including 24 developmental and outpost and 76 exploratory. The Minister of Mines has announced that a vast exploration program will be conducted in 1976. For this first year of the nationalized industry, 376 wells have been programmed (see table 3).

In mid-January 1976, LAGOVEN completed well number 2,000 in Langunillas on the east bank of Lake Maracaibo, the first well by a nationalized operating company. LAGOVEN plans to drill 125 wells in this area in 1976. Drilling was also continued in the Cretaceous zone below Lake Maracaibo.

A Mines Ministry official acknowledged that the Cretaceous zone in Zulia probably contains significant oil deposits but noted that large volumes of

Table 3.—Development, outpost, and exploratory wells by operating company, 1976

<i>Company</i>	<i>Development and outpost</i>	<i>Exploratory</i>	<i>Total</i>
AMOVEN	13	—	13
BARIVEN	1	—	1
BOSCANVEN	—	—	—
CVP	7	7	14
DELTA VEN	11	1	12
GUARIVEN	15	12	27
LAGOVEN	122	12	134
LLANOVEN	13	4	17
MARAVEN	11	6	17
MENEVEN	87	19	106
PALMAVEN	—	2	2
ROQUEVEN	10	—	10
TALOVEN	13	8	21
VISTAVEN	1	1	2
Total	304	72	376

Source: *Petroleum Industry Development and Outlook*, DIB 76-03034, March 1976.

gas would be required to make the wells flow. A technical seminar held in Maracaibo in December 1975 reported that of the 21 Cretaceous wells drilled in the south lake, five were successful. This source indicated that an additional 25 Cretaceous wells are planned for the lake over 1976-80.

In mid-December 1975, an official of CVP announced that geophysical exploration had been carried out on 80% of the Venezuelan continental shelf. CVP, which had the sole authority for exploration in the nonconcession areas prior to nationalization, conducted geophysical surveys covering approximately 9,315 miles and 5.8 million acres, and interpreted 18,630 miles of seismic lines during the 1974-76 period. The company drilled 58 exploratory wells over the same period, of which 32 in the Orinoco heavy oil zone were stratigraphic. CVP developed 647 million barrels of new crude reserves and 203 billion ft³ of gas.

Perhaps the most significant development in secondary recovery was announced by Shell and the Ministry of Mines in December 1975. A \$23-million continuous vapor injection project at Tijuana on the eastern shore of Lake Maracaibo was inaugurated. This area, known as the Bolivar coast, is said to have the second largest volume of heavy oil in place. Utilizing 19 boilers, the project will produce an estimated 116,000 bpd above that obtainable by conventional methods.

Orinoco Petroliferous Zone

Venezuela's largest reserves of nonconventional petroleum are located in a deposit along the northern bank of the Orinoco River, extending for a length of about 375 miles from Guarico State in the west to Delta Amacuro in the east. The deposit is approximately 30 to 40 miles wide. It has been popularly known as the Tar Belt for many years because of the high viscosity of the oil that has been extracted. More recently it has been referred to officially as a petroliferous zone in view of evidence that it may contain oils of higher gravity. Reserves in place in the zone were estimated at about 700 billion barrels in an incomplete survey conducted in 1967. All succeeding surveys have consistently indicated that reserves may be even higher. Stratigraphic soundings show that the petroliferous sands are thicker than was first thought; that the area of the petroleum sediments is greater than was originally believed, especially towards the south; and that the gravity of the oil, even near the river, is no less than 8 degrees API.

Up to 150,000 bpd is already being taken at the fringes of the zone from former concessions that were operated by Phillips, Amoco, Creole, and CVP. Some 16 stratigraphic wells were drilled in 1973, 31 in 1974, and 14 in 1975. A total of 42

exploratory wells was drilled through 1974 and two more in 1975. As of mid-1975, about 6,700 miles of seismic lines had been completed by CVP and the Mines Ministry, and an estimated 1,500 miles remained to complete that phase of the zone investigation.

Simultaneous with this effort, there has been a running debate within Venezuela as to whether a major development program should soon be undertaken. The conservative view is that the Orinoco oil be kept untouched for the benefit of future generations. A variation of this theme claims the Orinoco need not be "sacrificed" now, since there is a large volume of conventional oil shut in that could be produced if needed. The more widely held belief is that development must soon begin in order to have sufficient production from that region to complement declining conventional production a decade hence.

The experience so far has indicated that primary production by conventional methods in the zone has resulted in the recovery of only between 3% and 10% of the crude in place. In December 1975, the first of six wells in a new series was tested at a site 15 kilometers (km) north of the Orinoco River. It produced 75 bpd of 9.3-degree API crude. The crude contained 3.4% sulfur, 390 parts per million (ppm) vanadium, and 72 ppm nickel.

It is generally agreed that three fundamental questions need to be answered:

1. Whether the oil is producible and with which techniques;
2. Whether it can be upgraded and with which methods; and
3. Whether it can be sold profitably.

The draft Fifth Development Plan addresses itself to the above questions. In addition to calling for geophysical exploration of the entire area, sufficient stratigraphic wells to determine the oil structure distribution, and complementary geochemical, sedimentology, and other investigations, it also recommends test production. The production would utilize traditional methods, as in the new six-well program, plus vapor injection, gas combustion, and omniferous bombs. Upgrading of the heavy oil production would be accomplished through application of a first generation of coking plants, whereby the coke produced from the heavy oil would be burned to generate vapor to stimulate the producing wells and be injected to increase recuperation. Also recommended is intensive testing of catalyzers that could demetalize the crude. The Plan recommends that testing be carried out in institutions specializing in this process, to be established in Venezuela, and in such institutions abroad. Mines Ministry officials believe that the heavy crude can ultimately be commercially produced at a cost

of \$4 to \$5 per barrel; thus, the development would be economically feasible at prevailing prices.

In early February 1976, the Minister of Mines announced that the Venezuelan Government plans to urge immediate approval of a program to begin a limited, but fully integrated, operation in the Orinoco zone. The program would involve four 50,000-bpd pilot plants to begin operations within 6 or 7 years. The Minister stated that the Government will consider various possibilities of financing the plants, including association with private capital or other state companies. He specifically mentioned Canada as a possible associate because of that country's experience with the Athabasca tar sands. The cost of developing the Orinoco heavy oil should be around one-third that of the more complex Canadian deposits.

REFINING

Venezuela's official refining capacity has for several years been stated as 1.6 million bpd. Throughput has not approached this level, however, in part owing to regular shutdowns for maintenance, but more generally because of a lack of sufficient market demand for the range of products. Potential refining capacity is roughly equivalent to 50% of potential production capacity. The export equation has been less; about 37% of first half 1974 exports were refinery products, and 32% for the same period in 1975. Refinery yields in 1974 were 64% fuel oil; 16% gasoline and naphthas; 12% kerosenes and distillates; and 8% asphalts, lubricants, and liquefied gases. The declining demand for fuel oil, Venezuela's major refinery product, explains the 5% shift from refined products to exports of crude oil in the first half of 1975.

Refinery throughput averaged 1.2 million bpd in 1974, of which 947,000 bpd was exported and 249,000 bpd was consumed domestically. The latter figure included ships' bunkers. Creole Petroleum Company's refinery production reflects the overall decline in throughput in 1975. For the first 9 months of the year, Amuay processed an average 340,000 bpd compared to 553,000 bpd in 1974.

Venezuelan refineries obtained a total of 69.4 million m³ of subproducts, of which residual fuels were 46%, desulfurated fuels 18%, and gasoline 8% in 1974 (see table 4). Major refineries are operated in Amuay and in Cardon, with 48% and 26% of Venezuela's total refinery capacity, respectively. These two installations are the chief locations for desulfurization. Total desulfurization capacity in Venezuela is 400,000 bpd. Total production of desulfurated fuels with a maximum sulfur content of 1.9% was 77.7 million barrels during 1974.

The difficulty in marketing Venezuelan products in recent years, particularly fuel oils, has led to

Table 4.—Products obtained from crude oil, 1973 and 1974
(in thousands of cubic meters)

Products	1973	1974
Motor gasoline	5,092	5,764
Aviation fuel	34	46
Naphthas	5,957	5,357
Naphtha turbo-kero-turbo	2,607	1,991
Kerosene	895	570
Distilled	9,270	7,679
Residual fuel	35,822	32,248
Desulfurized fuel ¹	12,547	12,346
Asphalt	836	604
Oil and distilled oils	685	1,063
Dry gas	1,139	875
Liquefied gas	567	491
Coke	124	117
Black charcoal	168	170
Stoddard	32	35
Paraffin	29	30
Others	7	18
Total	75,811	69,404

¹ Maximum content 1.9% sulfur in weight.

Source: Ministry of Mines and Hydrocarbons Annual Report 1974.

much discussion of the feasibility of changing refinery yields. In various technical conferences throughout 1975 the question was debated. While some government technicians have called for immediate investments to change the basic yields, others have said that care must be taken to study market demand and that refinery investments should be related to the developing petrochemical industry. There have been predictions that, given the current production levels and rate of increase in domestic consumption, Venezuela may have little if any gasoline to export within 5 years. Thus, new investments should also be directed at increasing the range of light products. To convert or expand the range of local refineries which produce residual fuel oils will require major investments.

The draft Fifth Development Plan now being debated and studied calls for such investments. The Plan would involve an investment program to adapt existing refineries to process heavy oils; to produce specialty products such as paraffins, benzene, toluene, xylene, and other aromatics; and to process residuals into naphthas and distillates up to an ultimate goal of 1 million bpd.

TRANSPORTATION

The national network of oil pipelines reached an extension of 6,228 km in 1974 (see table 5). In Venezuela all crude oil is transported through pipelines to the shipping terminals or to the refineries. The same is true of gas, which is sent through ducts to processing plants or to industrial end users.

The following tabulation shows the volume of all types of petroleum products transported by Venezuelan pipelines in selected years, in thousands of m³.

Year	Primary pipelines	Secondary pipelines
1965	221,222	126,848
1970	236,515	122,232
1972	225,337	92,425
1973	239,206	90,110
1974	215,285	86,325

A small amount of the refined products is sent through polyducts, of which there are approximately 512 km. In 1973, polyducts transported 1.6 million m³ of refined products, about 22% of transport capacity. In 1974, polyducts transported 1.8 million m³, about 25% of capacity. The increase is attributed to greater national consumption. Polyducts are generally used to reach storage tanks surround-

Table 5.—Length of pipelines, by operating affiliate, 1976

Company	Oil pipelines (km)	Gas pipelines (km)	Multiproduct pipelines (km)
AMOVEN	18	—	—
BARIVEN	189	91	18
BOSCANVEN ..	125	42	25
CVP, S.A.	192	1,852	23
DELTAVERN ...	231	13	8
GUARIVEN ...	270	—	4
LAGOVEN	938	295	16
LLANOVEN ...	697	—	8
MARAVEN	956	747	378
MENEVEN	2,056	19	32
PLAMAVEN ...	192	—	—
ROQUEVEN ...	200	—	—
TALOVEN	152	—	—
VISTAVEN	12	—	—
Total	6,228	3,059	512

Source: Petroleum Industry Developments and Outlook, DIB 76-03034, March 1976.

ing the refineries; from there the products are transferred into trucks.

Gas ducts had a length of 3,058 km in 1974 of which 1,295 km belong to the CVP. The total volume of gas transported in 1974 was 11.9 million m³, triple the 1965 volume.

Tankers are extremely important in oil and sub-products transportation. The Venezuelan fleet has 14 (see table 6).

SUPPORT INDUSTRIES

A large number of contractors, suppliers, and service companies provide most of the equipment and services needed by the oil companies to efficiently produce crude oil, gas, and other petroleum products. These companies purchase a large portion of imports, which are used finally by the oil industry. In 1974, there were 408 registered contractors, suppliers, and service companies (see table 7). In

Table 7.—Support companies for the petroleum industry

Type of service	Number of companies
Construction and maintenance	157
Oil specialty	
Drilling	13
Well cleaning	16
Oil injection	8
Electric registration	5
Cementing	7
Other	17
Workshops	59
Land and water transportation	58
Consultants	36
Equipment and materials suppliers	29
Underwater	3
Total	408

Source: Commerce Team projections based on trade source estimates.

Table 6.—The Venezuelan tanker fleet, products transported, capacity, and tonnage

Owner and tanker	Transported product	Capacity (m ³)	Tonnage
LAGOVEN (Creole)			
Esso Amuay	Crude oil	47,070	37,797
Esso Caripito	Crude oil	47,070	37,797
Esso Caracas	Crude oil	52,781	41,582
Esso Maracaibo	Crude oil	52,781	41,582
Esso La Guaira	Products	14,113	11,080
Esso Margarita	Products	14,113	11,080
MARAVEN, MENEVEN (Shell)			
Shell Mara	Crude oil	49,286	47,000
Shell Aramare	Crude oil	41,759	36,684
Shell Nanguata	Crude oil	41,761	36,516
Shell Charaima	Crude and products	22,336	16,430
Shell Caricuao	LPG and products	22,336	15,994
Shell Murachi	LPG and products	8,930	7,377
CVP (CVP S.A.)			
Independencia I	Crude products	36,540	29,700
Independencia II	Crude products	36,540	29,700
Total		487,416	400,319

Source: Commerce Team information based on trade source estimates.

June 1975 total contracts with the oil companies by service, consulting, and construction companies were estimated at \$70 million.

Types of Services Provided

Underwater Services.—The largest percentage of the crude oil obtained in the Maracaibo area is located under the Maracaibo Lake. Pipe connections for oil transportation and for gas and water injection have a total length of 6,000 miles. All repairs, maintenance, and emergency work are made underwater, by specialized divers. Some of the oil companies have their own crews, but for activities beyond the crews' capacity, diver and underwater services are used.

Water Transportation.—These companies are engaged in transportation of personnel, supplies, and equipment by means of boats, barges, tugboats, and crew boats. The most important water transportation company is Tidewater Marine Services of New Orleans. This firm has 60 vessels in Venezuela, a total investment of approximately \$7 million, and an estimated 50% share of the market.

Helicopter Services.—These firms provide helicopter coverage for the location of oil spills in the Maracaibo Lake, as well as emergency transportation of crews to rigs at the lake. The main operators are Aertecnica C.A. and Oficina de Helicopteros.

Inspection Services.—These companies inspect crude oil and refined products for quality and quantity. Saybolt & Co. and Charles Martin & Co. are the most important firms in this group.

Support industries also provide the following:

- Construction contracting
- Oilwell cementing, shooting, and logging
- Drilling
- Oil-drilling and -production equipment and parts
- Pipes and pipelining
- Wireline services
- Communications equipment and parts
- Instruments
- Diesel engine parts
- Turbines and generators
- Safety equipment
- Air conditioning equipment and parts
- Oil blending chemicals

Several suppliers and service companies, a large number of which have total or partial foreign investment, expect an increase in their sales after nationalization, because oil companies facing nationalization in the short term did not make major investments. In addition, during the oil, steel, and equipment crisis in the 1973-74 period, oil companies engaged in massive stockpiling of supplies, which decreased purchases in 1975. Foreign companies are affected by Venezuelan and Andean Pact

agreements requiring that not more than 20% of a company's equity be foreign-owned by May 1977. Many firms have already taken steps to sell percentages of their shares to Venezuelan nationals in order to comply with these requirements. Other businesses, especially those providing highly specialized services, hope for some sort of agreement that will permit them to operate without selling. Only a few have indicated that they will leave the market if not permitted to retain full ownership.

SALES OPPORTUNITIES

The opportunities for U.S. business to supply requirements to the Venezuelan oil industry should be the same as when it was controlled by private concessionaires. Through technical service and off-take contracts, former concessionaires will handle marketing and procurement functions for the state companies. PETROVEN is committed to maintaining the efficiency of the industry in order to remain competitive and earn the revenue that is vital to the country's economic welfare.

Products in great demand by the oil companies are listed below, along with the value of imports for 1974.

<i>Product</i>	<i>Millions of U.S. dollars</i>
Oil well pipes	228
Valves	72
Chemical products	47
Natural gas compression plants	37
Various metal products	6

Imports of chemical products are sizable. In 1974, over 2,000 tons of oil dehydration products, 830 tons of mud conditioning materials, and 77 tons of oil well cementing agents were imported.

Oil companies imported equipment and supplies valued at \$81 million in 1973 and \$467 million in 1974. Of the 1974 imports, CVP purchased 39%, Creole 35%, Mene Grande 13%, Shell 6%, and 12 other companies the remaining 7%.

According to company sources, Creole had \$84.2 million in stock and \$69.8 million on order in May 1975. Inventory consisted of:

<i>Stock</i>	<i>Millions of U.S. dollars</i>
Tubular pipes, etc.	43.9
Spare parts	12.3
Chemicals and catalysts	6.1
Valves and fittings	4.6
Nuts, bolts, etc.	2.0
Equipment	1.0
Electrical materials .....	.4
Miscellaneous supplies	5.9
Additional stocks at Amuay	
Refinery	8.0
Total company stock	84.2

Selected Markets

Steel pipes.—The local market for pipes was estimated at 540,000 metric tons (MT) in 1974. About 57% of the 290 MT of seamless pipes purchased in that year were imported, as were 20% of the 250 MT of welded pipes. Approximately 50% of the tubulars required by the oil companies are imported; the rest are obtained locally, mainly from Siderurgica del Orinoco (SIDOR), the national steel mill. Oil companies are required by law to purchase pipes from SIDOR. Authorization to import is normally granted when SIDOR does not manufacture the required pipe or is unable to supply it within the required time. Unless prior permission to import is received from SIDOR, a 60% duty is applied.

Siderurgica Occidental (SIDEROCA), a private manufacturer of pipes, supplies about 70% of its production of 2-inch to 6-inch pipes to the oil companies. SIDEROCA's sales to the oil sector were estimated at 16,200 tons in 1973; 23,800 tons in 1974; and 43,400 tons in 1975; they are projected at 60,900 tons in 1980.

Instruments.—With the rapid modernization of industrial processing facilities in Venezuela, the market for process control instrumentation has expanded steadily. Imports of instruments were an estimated \$6.3 million in 1974, an approximate 30% increase over 1973. The oil industry accounts for purchase of about 25% of the imported instruments. (Excluded from these figures are instruments that were utilized in turnkey projects.) Honeywell, Taylor, Foxboro, Fisher, and Leeds & Northrup are among the U.S. sellers of instrumentation to the oil industry.

Pumps, compressors, and valves.—The market for pumps fluctuated in the early 1970's. Sales of pumps reached a high of \$10.3 million in 1972, fell sharply in 1973 to \$1 million, and rose slightly to \$1.1 million in 1974. Demand for compressors rose from \$3.5 million in 1972 to \$5.7 million in 1974.

Prior to nationalization of the oil industry, pumps, compressors, and related parts were usually

purchased in the United States, even by companies of European origin. Now, however, price is expected to become a more decisive factor in the market for pumps. Gas compressors and parts have been obtained almost exclusively from abroad, with purchases made in the United States or through local representatives.

Although the market for valves shows a strong American presence, the U.S. share is declining, in response to European and Japanese competition as well as to the establishment of local manufacturers with foreign technology.

The products for which U.S. suppliers are expected to maintain or increase sales are listed below.

- Electric and nonelectric handtools
- Drilling equipment and parts
- Automotive maintenance equipment and tools
- Generators and motors
- Turbines
- Boilers and steam engines
- Conveyors
- Hoisting machinery
- Compressors
- Gas compressors
- Centrifugal, rotary, and reciprocating pumps
- Laboratory equipment
- Air conditioning equipment
- Communications apparatus
- Process control instrumentation
- Industrial safety equipment
- Chemical products
- Marine hardware
- Motorboats
- Helicopters

Businessmen should consult the home offices of the former concessionaires for details on requirements. Contacts with the operating companies are also advisable in order to obtain early information on annual work programs. U.S. companies may also wish to follow up on the invitation of the Minister of Mines to demonstrate their interest in the proposed pilot development of the Orinoco zone. There is strong interest in technological services that might have application to this project.

5 Chemical—Petrochemicals

The performance of the Venezuelan chemical industry has fallen considerably below its potential. This industry, like some others that should have been able to capitalize on the petroleum boom in 1974, suffered despite excellent conditions for development.

To rectify this unsatisfactory situation, a new effort given high priority by the Venezuelan Government is now being made in the case of chemicals. Venezuela's considerable financial resources, private as well as public, will be tapped to support the National Petrochemical Plan, a thoroughly rethought and coordinated development plan for the industry.

The National Petrochemical Plan calls for the investment of approximately \$2.2 billion over 10 years (over \$1 billion over 5 years). It includes several new plants to be developed by the government-owned Instituto Venezolano de Petroquímica or Venezuelan Petrochemical Institute (IVP). An additional 13 companies will be formed, using government funds and private capital.

The Plan calls for the development of four complexes. The largest will be El Tablazo, a 2,000 acre tract located in Zulia State on the eastern side of Lake Maracaibo. Completion of the project is scheduled for 1980, at which time Venezuela will have about \$1.5 billion invested in the petrochemical sector. By 1976, it is expected that the second stage expansion of the complex, comprising a polyvinyl chloride (PVC) plant, an ammonia facility, and a vinyl acetate plant, will be completed.

Moron is the site of another growing petrochemical establishment being expanded by the IVP. An estimated \$77 million will be invested over 3 years to produce ammonia, urea, phosphoric acid, sulfuric acid, and triple superphosphate. The Moron complex expansion plans call for the annual production of 600,000 metric tons (MT) of chemical fertilizers, 250,000 MT of urea, 82,500 MT of phosphoric acid, 62,000 MT of granulated trisodium phosphate, and 146,000 MT of diammonium phosphate. In addition, IVP plans new joint ventures to

produce styrene butadiene (SB) rubber, high density polyethylene, polypropylene, and propylene tetramer. Other large investments are likely to be made in the large Eastern (Oriente) olefin complex in the Orinoco oil and gas fields and in an aromatic complex in the Paraguana peninsula on the Caribbean. Total value of production by Venezuela's burgeoning petrochemical industry is expected to reach \$440 million per year by 1980.

THE SETTING

A number of factors combine to make Venezuela an ideal place to produce petroleum-derived chemicals. The gas associated with Venezuelan crude petroleum is one of the richest in the world in terms of liquid components. The crude oil itself is rich in aromatic components. The country is situated near the large chemical markets of North America and areas of growing demand in the Andean Common Market and the rest of Latin America. Finally, the country has the financial wherewithal to make very large investments in chemicals without short-changing other industries in need of development.

If Venezuela is to take full advantage of its available feedstocks to produce a broad gamut of basic organic chemicals and derivatives, major capital investments will have to be made. These investments will center on expanding those existing chemical production facilities that are considered economically sound.

One restraining factor is the limited domestic market. Efficient production levels would be far in excess of local market demand. Exports will be necessary.

A related matter is the participation of private firms, Venezuelan and foreign, in the development of the chemical industry. This issue came very much to the fore in early 1975 when a group of Venezuelan entrepreneurs formed Pentacomplejo Petroquímica de Orinete C.A. (PENTACOM). The intention was that this firm take charge of much of the country's petrochemical development by working with the

existing state-run entities and, at the same time, involve the capital and expertise of Venezuelan and foreign firms in a major way.

The impetus behind this initiative was provided by the plans of certain Middle Eastern countries to go heavily into chemical production and by what is generally conceded to be the unsatisfactory performance of the IVP. Since 1953 IVP has been the most important government agency concerned with the development of the chemical industry. It has been particularly vulnerable to changes in the political direction of the national Government, at least partly because of its legal status as an institute. A lack of management continuity has resulted; in a recent 12-month period, for example, IVP had three different directors.

But despite its unhappiness with the performance of IVP, the administration of President Perez was not prepared to turn the management of future chemical industry growth over to a private group. Consequently, the PENTACOM concept was blocked by the Government. This rejection was not based solely on a desire to keep petrochemical development entirely under the wing of the Government. In fact, in a working paper that was to be used as the basis of the National Petrochemical Plan, the Government proposed to allow private capital to participate in basic petrochemical industries that had previously been strictly the domain of IVP.

In an attempt to move away from the status quo, the Government gave to a newly created National Petrochemical Council the job of drawing up the fully detailed National Petrochemical Plan. It also oversees the operation of all existing government-run facilities as well as the construction of any new ones. The Council is presided over by the Minister of Mines and Hydrocarbons. It reports directly to the President. It has the authority to decide whether any proposed venture should be strictly government-owned or whether some degree of private participation would be permitted.

STRUCTURE OF THE INDUSTRY

General

According to trade sources, the production value of Venezuela's privately owned chemical industries has expanded at an annual rate ranging from 8% to 12% during the last 10 years. The value of production in 1974 was estimated at approximately \$1.5 billion. Imports (registered under the "Products of chemical industries and related industries" section of the import statistics) have been estimated at \$375 million. The total number of companies operating in the sector expanded from 436 in 1961 to 640 in 1974 (see table 1). There are 394

Table 1.—Some manufacturers of chemical products

Manufacturer	Chemical product
Adhesivos y Gomas Venezolanas Adgovenca	Adhesives
Akron C.A.	Adhesives
Barnix C.A.	Varnishes
BASF Venezolana S.A.	Formaldehyde, mineral oils, polyurethane, resins, urea
Bayer Quimicas Unidas C.A.	Emulsifiers, glycerine, mineral oils, soaps, stearic acids
Ciba-Geigy S.A.	Detergents, humidifiers, pigments
Celanese Venezolana	Fibers, polystyrene
Colgate-Palmolive	Detergents, soaps
Concentrados Liquid S.A.	Detergents, flavors
Couttenye & Company S.A.	Adhesives, polyvinyl, resins
Calgon Interamerican C.A.	Water treatment compounds
Darex S.A.	Sealants
Du Pont de Venezuela C.A.	Herbicides, paints, phosphates, resins
Estireno del Zulia Estizulia C.A.	Polystyrene
Goodrich Chemical de Venezuela C.A.	Plastifiers, polyvinyl
Hilados Flexilon S.A.	Fibers, polystyrene
Holchst Remedía S.A.	Pigments, polyvinyl
International Flavors & Fragrances de Venezuela	Fibers
Industria de Productos Asfálticos	Concrete additives, paints, sealants
Intequim C.A. Quimica Integrada	Concrete additives, formaldehyde, resins
Johnson & Son de Venezuela S.A.	Pesticides, waxes
Las Llaves S.A.	Detergents, glycerine, soaps
Leros, Industrias Nacionales	Formaldehyde, polyvinyl, resins
3M de Venezuela S.A.	Abrasives, adhesives, adhesive tape, sealants
Nalco de Venezuela C.A.	Coolants, water treatment compounds, chemicals for leather
Oxidor C.A.	Phthalic acid
Pegamentos Venezolanos, Pevenca	Adhesives, resins
Pinco-Pittsburgh C.A.	Paints, varnishes
Pinturas Montana S.A.	Paints, varnishes
Pfizer S.A.	Calcium propionate, sodium benzoate, sodium propionate
Procter & Gamble de Venezuela C.A.	Detergents, soaps
Productora de Gas Carbonico S.A.	Calcium and sodium propionate, carbonic gas, sodium benzoate
Quiminsa, Quimica Industrial S.A.	Detergents, sulfonic acid
Resimon C.A.	Formaldehyde, herbicides, polyvinyl, polymers, polyurethane, resins
Rohm & Haas Venezuela C.A.	Herbicides
Sandoz de Venezuela S.A.	Paints, pigments, chemicals for leather
Servi-quim C.A.	Detergents, dodecyl benzene, mineral oils
Sherwin-Williams Venezolana C.A.	Paints, varnishes

**Table 1.—Some manufacturers of chemical products—
Continued**

Manufacturer	Chemical product
Stahl Polyvinyl C.A.	Polyvinyl, chemicals for leather
Suelatex C.A.	Plastifiers, resins, chemicals for leather
Sudamtex de Venezuela C.A.	Fibers, Polystyrene
Tanatex de Venezuela C.A.	Detergents
Tapa-Tapa Quimica C.A.	Chloritic acid, sodium sulfate, sulfuric acid
Tempus S.R.L.	Detergents
United Carbon de Venezuela C.A.	Pigments
Venezolana del Nitrogen C.A. (NITROVEN)	Ammonia, stearic acid
Venezolana de Resinas C.A.	Formaldehyde, mineral oils, plastifiers, polyurethane, resins
Quimica Venoco C.A.	Detergents
Vidrios Solubles C.A. Visolca	Silicates
Wyandotte de Venezuela C.A.	Detergents, silicates, sulfonic acid
Venezolana de Pigmentos C.A.	Lead chromate, pigments, zinc chromate

firms in the industrial chemical products manufacturing group, 24 in the other chemical products group, and 223 in the plastic products area.

Participation of foreign capital in Venezuela's chemical industry is high. Most foreign companies invest in plants that produce paints and varnishes, detergents, resins, fibers, water-treating compounds, and adhesives. However, foreign participation is declining as subsidiaries of foreign companies sell portions of their equity and as percentages of Venezuelan ownership increase in joint-venture companies. These changes are due to recent measures taken by the Government in accordance with Andean Common Market regulations and its own policies towards foreign investment in local companies.

Basic Chemicals and Derivatives

About 50 companies operate in this sector; the most important is the IVP and its affiliated firms. The remaining manufacturers are primarily small companies. Products manufactured include acids and mineral compounds, organic chemicals, and industrial gases. Among the raw materials extensively used in the production of these basic chemicals are sodium carbonates and silicates, calcium carbonates, sulfur, ammonia, caustic soda, petroleum, and natural gas. Imports of organic and inorganic compounds for basic chemical production totaled over \$15 million in 1974. They included numerous inorganic compounds and first and second generation organic compounds. The high percentage of imported raw materials is expected to decline over the next few years as the production of basic chem-

Table 2.—Estimated Venezuelan imports of chemical products and U.S. shares, 1974

Description	Total imports	U.S. share (in U.S. dollars)	Per- cent
Carbon	494,149	164,255	33.2
Anhydric and phosphoric acids	1,380,486	1,064,855	77.1
Sodium hydroxide	1,075,681	620,639	57.7
Magnesium oxide	790,099	89,203	11.3
Zinc oxide	1,856,096	355,649	19.2
Aluminum oxide	7,283,462	3,012,993	41.4
Titanium oxides	2,265,986	91,106	4.0
Chrome sulfate	1,067,676	33,406	3.1
Aluminum sulfate	741,564	438,992	59.2
Sodium sulfate	659,486	59,956	9.1
Sodium phosphates ...	918,471	573,863	62.5
Sodium tripolyphosphate	8,264,658	2,139,481	25.9
Ammonia sulfate	3,477,248	3,435,376	98.8
Calcium sulfate	2,371,188	694,290	29.3
Sodium carbonate	4,048,288	2,765,153	68.3
Sodium bicarbonate ...	708,954	278,520	39.3
Monoalcohols			
Methanol	1,161,192	1,147,118	98.8
Isopropyl	1,431,084	1,359,931	95.0
Butylic	675,102	353,288	52.3
Hexanol	528,794	376,887	71.3
Amyl	1,950	288	14.8
Other	3,408,614	1,673,184	49.1
Polyalcohols			
Ethylenglycol	3,247,645	1,540,934	47.4
Propylenglycol	1,016,723	776,006	76.3
Hexylenglycol	174,351	75,889	43.5
Pentaerithrytol	448,078	91,201	20.4
Other	1,155,398	833,401	72.1
Xylol	1,719,111	1,008,163	58.7
Toluene	1,189,738	956,760	80.4
Styrene	8,397,560	8,342,341	99.3
Benzene	1,529,992	1,417,744	92.7
Phenols	4,289,324	2,257,818	52.6
Epoxy, epoxy-alcohols-phenols-ethers	1,281,660	610,369	47.6
Acetone	1,353,764	865,423	63.9
Vinyl acetate	1,954,314	1,700,222	87.0
Antibiotics	12,542,468	5,321,452	42.4
Synthetic colorants ...	24,985,192	3,349,397	13.4
Trementine	1,650,860	1,300,270	78.8

icals by the petrochemical complexes reaches optimum production levels.

Almost 100% of the process technology for this sector is imported. The establishment of industries is normally based on turnkey contracts. Development is still at a medium level and will continue so until more basic chemicals are manufactured by local industry in sufficient quantities to cover the growing demand.

The Venezuelan Petrochemical Institute

The IVP is a semi-autonomous government entity with considerable responsibility for the establishment and development of the petrochemical industry. As such, it accounts for the manufacture of the majority of petrochemical products in the coun-

try. The activities of IVP include direct investment in production facilities and participation in joint-venture companies. Tables 3 and 4 contain a break-

Table 3.—IVP manufacturing activities by product

Fertilizers

Superphosphate, simple and triple, powdered
Diammonic phosphate
Bromate mixtures
Ammonium sulfate
Granulated triple superphosphate
Urea

Explosives

Nitroglycerin
Anful
Dynamite
Nitrocellulose
TNT

Industrial products

Chloritic acid
Chlorine gas
Phosphoric acid (50% & 54%)
Nitric acid
Sulfuric acid
Sodium hypochlorite
Caustic

Olefins

Ethylene
Propylene

Table 4.—IVP manufacturing activities by company

Affiliated companies

Venezolana del Nitrogeno C.A. (NITROVEN): ammonia, urea
Empresa Nacional de Salinas (ENSAL): sodium nitrate

Mixed companies

Tripoliven, C.A.¹: phosphoric acid (28%)
Derivados Vinilicos C.A. (DEVINCA)¹: vinyl acetate, acetic acid
Productos de Alcoholes Hidratados (PRALCA)¹: ethylene oxide, ethylene glycols
Plásticos Petroquímica (PETROPLAS)¹: vinyl chloride
Polímetros del Lago C.A. (POLILAGO)²: low density polyethylene
Plásticos del Lago C.A. (PLASTILAGO)¹: high density polyethylene, polypropylene
Química Venoco C.A.²: 2-ethyl hexanol, propylene tetramer, solprene and PB rubber
Elastómeros Internacionales C.A. (ELASIN)¹: methanol, polysoprene
Oxidaciones Orgánicas (OXIDOR)²: Phthalic anhydride
Estirenos del Zulia C.A. (ESTIZULIA)¹: polystyrene
Productos Halogenados de Venezuela C.A. (PRODUVEN)¹: coolants
Ferroaluminio C.A. (FERRALCA)¹: aluminum sulfate
Tripoliven C.A.¹: sodium tripolyphosphate
Maramonia C.A.¹: ammonia

Mixed companies established abroad

Monómeros Colombo-Venezolanos, Colombia²: caprolactum, fertilizers
Petroquímica Dominico-Venezolana C.A. (PETRODOVE)¹, Dominican Republic; fertilizers.

¹ Company in planning or construction stage.

² Company in operation.

down of IVP manufacturing activities by product and company.

Direct production facilities of IVP are divided into two complexes or installations, one located at Moron and the other at El Tablazo in Zulia State. The only production thus far has been at the Moron complex. The only production facilities wholly owned by IVP at El Tablazo are the olefin plant and the soda-chlorine plant, which have not yet begun operations. The olefin plant is expected to produce 94,000 MT of ethylene and 90,000 MT of propylene annually, all of which would be exported, generating an anticipated income of over \$10 million. The soda-chlorine plant is expected to produce 50,000 MT of caustic soda and 40,000 MT of chlorine annually.

At the beginning of 1974, IVP had liabilities of \$65 million either in short-term bank loans or owed to foreign suppliers. At the same time the Institute was operating at about a \$2.3 million-a-month loss. These losses were the result of the Moron complex's low production capacity and of startup delays at the new fertilizer manufacturing installations. This situation was aggravated by the increased demand for fertilizers as a result of stepped up agricultural activities initiated by the Government. IVP was under contract to supply Venezuela with fertilizer at a given price, whether this fertilizer was produced nationally or imported. When its production faltered, the company had to provide imported fertilizer at less than the purchase price on the world market.

Another financial problem affecting IVP during 1974 was insufficient funds to cover increased production costs. To solve the critical financial situation, the Institute took the following steps: (a) obtained an additional credit from the government for \$86 million; (b) obtained a loan through the Agricultural Marketing Corporation for \$13.2 million to cover losses in the sales of imported fertilizers; (c) procured a subsidy for its imports of fertilizers for \$8.8 million; (d) obtained an additional loan of \$129.2 million from the Venezuelan Investment Fund (FIV) to cover increases in budgeted costs of new installations; (e) negotiated new export credits totaling \$8.1 million with European and American banks; (f) obtained additional credit from the Ministry of Finance to cover long-term obligations totaling \$86.5 million; (g) negotiated a reduction of interest rates on outstanding loans in the range of 25% to 50% with U.S. banks.

The Moron Complex.—During 1974, this complex increased production of mixed fertilizers, sulfuric acid, phosphatic rock, and TNT and expanded the installations used to produce ammonia and urea. Surplus sulfuric acid was exported to the Dominican Republic, Aruba, Curacao, and Colombia. Another

important achievement was the development of a new type of explosive, known as "slurry." Of the total investment of \$178 million originally planned for the Moron Complex, about \$77 million is yet to be spent. This is likely to be used in an expansion of the capacity of the chlorine plant (from 10,000 MT to 12,500 MT per year) and the caustic soda plant (from 11,000 MT to 14,750 MT per year). Also, a liquid- and solid-handling dock installation is planned to facilitate shipping of its own production and that of affiliated companies.

The Zulia Complex (El Tablazo).—Although IVP maintains only two manufacturing plants here, it is also responsible for overall administration of the complex. The olefin plant was about 95% completed by the end of 1974. Several starting tests had been completed but final startup was delayed because of the unavailability of feedstocks. The soda-chlorine plant also was 95% completed as of August 1975. It was expected to begin operations in late 1975 or early 1976. Other activities carried out by the Institute in this complex include the supplying of water, electricity, gas, and steam to the mixed companies operating within the compound. The docks, also under IVP's operation, were used during 1974 to dispatch 36,000 MT of ammonia and 4,000 MT of urea. Three thousand MT of styrene were received.

The original plan for the Zulia petrochemical complex plan calls for a total investment of \$207 million, of which 98% has already been spent. Infrastructural works are 97% completed; the electric generation installations, fluid-treating plants, solid-handling facilities, water obtaining and transportation facilities, propylene and ethylene storage, and all nonpermanent facilities have been finished.

The U.S. company Kellogg Panamerican Corporation has actively participated in the construction of the first olefin plant and in the provision of technical services for the construction of docks, power plants, earthworks, and interconnecting piping systems.

Under the new development plan a new integrated olefin complex will be constructed at El Tablazo. Based on the manufacture of thermoplastics and elastomers, it will require an investment of about \$830 million.

IVP—Affiliated Companies

Empresa Nacional de Salinas (ENSAL).—Established in 1968 with a capital of \$350,000, ENSAL is a 100% IVP-owned company engaged in the exploitation of salt deposits. Profits in 1974 amounted to \$350,000. Production is presently centered in the regions of Araya, Coche, and Cumaragua. Each year, the Araya deposit produces 70,000 MT of salt; Coche, 10,000 MT; and Cumaragua, 36,000

MT. Completely new industrial installations planned for Cumaragua should then be able to supply both the Moron and El Tablazo complexes. After the first phase of construction is completed, the site should produce 280,000 MT per year. Total annual capacity is projected to reach 500,000 MT within a few years. Other modernization projects are being undertaken at Araya and Coche at an estimated cost of \$21.9 million. Coche's capacity is projected to increase to 80,000 MT and Araya's to 160,000 MT per year. It is expected that the French company Salim du Midi will participate in these projects. Another project under consideration is the attempt to recover mineral salts contained in residual waters being returned to the sea from each of these locations.

Venezolana del Nitrogeno C.A. (NITROVEN).—This company has been the cause of many of the problems and backups at the El Tablazo complex. It was established in 1967 as a 50-50 joint venture between IVP and the International Development and Investment Co. Ltd. The purpose was the manufacture of nitrogenated products and fertilizers. After several stock transfers, IVP obtained control of 90% of the shares in 1974. The remaining 10% was transferred to the Instituto de Fomento Industrial de Colombia (IFI), Colombia's Industrial Development Institute. The original contract was modified to a turnkey project including an ammonia plant with a production capacity of 900 MT per day. The urea plant was to have a capacity of 1,200 MT per day, and the cost was to be \$50 million. After the contracts were signed in 1968, NITROVEN requested two additional plants identical to the first ones, raising investment cost to \$492 million. During its first productive year, 1974, NITROVEN produced 236,000 MT of ammonia (capacity: 600,000 MT) and 55,000 MT of urea (capacity: 800 000 MT).

NITROVEN's plant was designed in Spain using the "Gridler process." This uses a prototype compressor for the synthesis of hydrogen and nitrogen. The choice of equipment was determined mainly by different countries, depending on what credits could be obtained. Lack of coordinated purchasing contributed to a chain of problems in putting the plant into operation. Other major delays were due to problems with supplies of raw materials and energy. NITROVEN needs 3 million cubic meters (m³) of methane gas per day, 24,000 liters of water per minute, 140,000 liters of steam per hour, and 50,000 kw to operate. During 1974, the plant had to stop approximately 60 times because of problems with the electricity, steam, and water supplies. All of these problems have put NITROVEN's production at 30% or less of its rated capacity and have aged its equipment considerably. Labor conflicts have also added additional difficulties.

In order to try to solve NITROVEN's problem, the Venezuelan Government has decided to contract the administration of the plant to a foreign company. Bids have been requested for that purpose. Also, the Tennessee Valley Authority has been requested to prepare a complete study of the company's operation and suggest procedures to be adopted. Finally, in an effort to assure a steady supply of electricity, NITROVEN is constructing an autonomous generating system. This should be finished in early 1976. Presently the NITROVEN complex includes: two ammonia plants, two urea plants, two cooling towers, three boilers, two ammonia storage tanks, one bulk urea warehouse, and two quick cycle units. Two additional ammonia plants are planned within the next 4 years with an investment of \$140 million.

Table 5.—IVP volume of production
(in metric tons)

	1971	1972	1973	1974
Fertilizers				
Urea				1,482
Simple superphosphates dry	5,089	13,995	11,399	18,460
Triple superphosphates dry	11,652	16,970	9,493	12,896
Ammonium sulphate ..	26,642	49,405	20,124	21,901
Powdered	37,571	44,526	54,045	110,000
Granulated	8,396	12,791	3,897	.....
Simple superphosphates wet	5,464	19,384	12,858	21,965
Triple superphosphates wet	13,908	19,940	11,219	13,200
Phosphorite	25,467	49,465	31,946	45,400
Total	134,189	226,476	154,981	245,304
Industrial products	79,096	143,785	124,254	160,867
Explosives				
Anful	6,926	6,505	8,859	10,934
Dynamites	477	399	893	830
Ammonites	72	.....	104	218
Nitrocellulose	530	870	841	529
Nitroglycerin	114	91	200	196
Mononitrotolvene	175	420	474	919
Dinitrotolvene	53	13	98	43
TNT civil	149	201	340	481
TNT military	18	241	143	579
Total	8,514	8,740	11,952	14,729
Mines	49,101	44,396	95,395	121,467
Grand Total	270,900	423,397	386,582	542,367

Source: Ministry of Mines Annual Reports.

Joint Venture

Only three joint-venture companies are actually in operation; others, however, are under construction or in the planning stage. Following are details on those joint-venture companies operating locally.

Oxidaciones Organicas (OXIDOR).—This corporation was established by Corporacion Industrial Montana which owns 60%; Sherwin-Williams Ven-

ezolana C.A., 29%; and IVP, 11%. OXIDOR manufactures phthalic anhydrite. Originally the plant had a 4,400-tons-per-year capacity; by 1975, it produced nearly 12,000 MT annually.

Quimica Venoco C.A.—Quimica Venoco was established by IVP, the latter owning only a 15% share. Industrias Venoco C.A. has a 55% share, and Shell Investment Company and Phillips Investment Company each owns 15%. Quimica Venoco will manufacture two-ethyl hexanol, propylene tetramer, solprene and polybutadiene rubber, and dodecyl benzene. The solprene and PB rubber plants are still in the planning stage. Two-ethyl hexanol and propylene tetramer plants are under construction. The dodecyl benzene plant is in operation with an annual capacity of 18,000 MT.

Estireno del Zulia C.A. (ESTIZULIA).—ESTIZULIA is owned by IVP (37.5%), the Grupo Zuliano C.A. (37.5%), and the U.S. company, Dart Industries Inc., (25%). A polystyrene plant with a capacity of 14,000 MT per year is presently operating, and another plant with an 18,000-ton capacity is planned. Monomer to produce polystyrene is presently being imported.

Other Joint Ventures

Companies with plants either in construction or close to it include Polimetros del Lago C.A. (POLILAGO), Productos Halagenados de Venezuela C.A. (PRODUVEN), Plasticos Petroquimica (PETROPOLAS), Ferroaluminio C.A. (FERRALCA); Tripoliven C.A., and Plasticos del Lago C.A. (PLASTILAGO). FERRALCA's new plant designed to produce 30,000 tons of aluminum sulfate per year was to begin operations in November 1975. The \$3.5-million facility located near the Moron complex was to serve as an example of cooperation between the Government and undisclosed private investors, Venezuelan and foreign. PRODUVEN, a \$5.4 million facility built to produce 6,000 tons of refrigerants per year, was scheduled to be completed in early 1976. Tripoliven C.A., due to begin operations about the same time, will produce 30,000 tons of sodium triphosphate per year in its \$4.7-million plant. The Maramonia C.A., Elastomeros Internacionales C.A. (ELASIN), Petroquimica Dominico-Venezolana C.A. (PETRODOVE), Derivados Vinilicos C.A. (DEVINCA), and Productos de Alcoholes Hidratados (PRALCA) projects were being revised by IVP in 1975. Only one of the two companies projected for construction abroad, Monomeros Colombo-Venezolanos, is actually in operation. Organized in 1967, with an IVP participation of 35.4%, its annual plant capacity is 16,500 MT of caprolactum and 200,000 tons of fertilizers. Annual profits of

this company were estimated at \$318,000 in 1973. PETRODOVE, which will be located in Santo Domingo, Dominican Republic, is still in the project stage. Present plans call for the company to manufacture fertilizers with an annual capacity of 90,000 MT, using nitrogenated and phosphated fertilizers as raw materials. Estimated investment will be \$1.6 million. So far, IVP has 51% ownership; and Dominican Republic private investors, 10%. Investors for the remaining 39% have not yet been found. It was expected that the final decision on whether to go ahead with this project would be made in 1975.

CHEMICAL PRODUCTS

Fertilizers, Pesticides, and Insecticides

The main manufacturer and sole importer of fertilizers is IVP. Ten other companies, mainly manufacturers of pesticides and insecticides, can be included in this sector. Phosphoric and sulfuric acids and ammonia are among the raw materials used in the manufacture of these products. The pesticide industry imports an estimated 77% of its raw materials because the basic active ingredients needed in the manufacture of pesticides are not produced in Venezuela. Imported raw materials for that industry are estimated to have cost \$5.7 million in 1974. Pesticides are usually manufactured under foreign licenses.

Most of the commonly used insecticides are mixed locally. Toxics are imported, while the diluting agents are domestically produced. Imports of toxics are approximately 3,000 MT per year. Black Flag, Raid, Shelltop, and all Bayer brands are among the insecticides found in the Venezuelan market. The manufacture, formulation, storage, and application of insecticides are strictly controlled by government regulations. Insect repellents in the form of liquids and smoking coils also are produced, mainly by S. C. Johnson & Son Co., Bayer, and Productos Cruz Verde.

Resins, Plastic Materials, and Artificial Fibers

Included in this section are all types of synthetic resins, cellulose fibers, other artificial fibers, elastomers, and synthetic rubber. Eleven companies are active in this sector, including such private concerns as Celanese, Dupont, Couttenye, Resimon C.A., and others. Approximately 80% of raw materials used by the industry and 52% of all products consumed are imported.

From a technological point of view, this sector can be subdivided into two fields. The first is the production of thermoplastic polyvinyl and poly-

styrene, which have high technology and are produced with a relatively high output. The second is resins, which are produced by noncontinuous processes in small quantities and with low technology. This includes phenols, urea, melamines, and polyesters.

Resimon C.A., the largest manufacturer of resins and a member of the Pinturas Montana commercial group, operates a plant with an estimated capacity of 15,000 tons a year for various products including urea, phenol formaldehyde, acrylics, polyvinyl acetate, melamine resins, epoxy esters, processed and resinated oils, and epoxy varnishes.

Synthetic and manmade fibers (acetate and triacetate) are manufactured by Celanese Venezolana, a subsidiary of the Celanese Corporation. An affiliated company also produces nylon-6 and polyester fibers. Estimated annual capacity for manmade fibers is 12,000 tons. It is expected that this sector of the chemical industry will show spectacular development within the next 5 years because of the growth in petrochemical production and the new private businesses that will be established.

Paints and Varnishes

Of the 23 manufacturers in the paints and varnishes sector, four control about 70% of the market. They are Pinco-Pittsburgh, Pinturas Montana, Sherwin-Williams, and Dupont. About 50% of all raw materials in this industry have to be imported. In general, the technology that is utilized is high, and modern equipment is found in most of the large and medium factories.

The approximate production and installed capacity of three major paint and varnish manufacturers is given below:

	<i>Production</i>	<i>Installed capacity</i>
Pinturas Montana	5.5 million gal	6.0 million gal
Sherwin-Williams	5.0 million gal	6.0 million gal
Pinco-Pittsburgh	3.0 million gal	4.5 million gal

Most of the formulas and technology have been obtained through licenses. Equipment is nearly 100% imported, with the sole exception of plastic and stainless steel tanks, mixers, and some types of pumps.

Pharmaceuticals

Venezuela's pharmaceutical industry, protected by import restrictions, has grown rapidly during the last few years. The value of local production reached approximately \$102 million in 1974, up \$58 million since 1966. Imports of pharmaceuticals for 1974 were estimated at \$14 million; and antibiotics, at \$12 million. Raw material consumption of the industry was estimated at \$14 million, of which 85%

was imported. The industry consists of 83 companies with a total investment estimated at \$135 million. It is concentrated in and around Caracas, with a few important companies located in Valencia and Maracaibo. Most of the larger businesses are subsidiaries of well-known U.S. companies—Sidney Ross, Merck, Sharpe and Dohme, Parker-Davis, Eli Lilly, Pfizer, Abbot, Wyeth, and Schering. Such important European manufacturers as Ciba-Geigy, Sandoz, Hoechst, Bayer, and E. Merck are also represented. Some of the larger locally owned companies, for example, Profar, Vita, Laboratorios Velloso, Palenzona, Behrens, and Wuinao, produce patent medicines under license. Behrens conducts basic research in the field of snake serums; and the Venezuelan Institute of Scientific Research in the fields of parasitic and tropical diseases.

No fine chemicals or pharmaceutical ingredients are manufactured or available locally with the exception of ethyl and isopropyl alcohols, sugar, starch, dextrine, glucose, milk, paraffin, vaseline, glycerin, flavors, and zinc oxide. Practically the entire spectrum of raw materials must be imported. The pharmaceutical industry, which basically mixes and packages medicines, uses up-to-date methods for these functions. Equipment in most cases is highly flexible and best suited for small lots. Manufacturers tend to purchase a large amount of European-made equipment, especially German, since U.S. packaging machinery usually has too high a production volume. The standards of hygiene are high and well maintained and the quality controls are rigid. Quality checks required by law are made in a firm's own control laboratories and at the Ministry of Public Health. Each product, and each presentation, form, and concentration of a product, has to be registered with this Ministry, which then conducts spot quality checks. A large number of these registrations are rejected every year since not only the chemical consistency has to be approved, but also because proofs, literature, research results, and medical opinions of the product's effectiveness are required by the Ministry. Advertising also has to be approved by the Ministry.

Control of drugs and narcotics is strict. All drug handlers are subject to unannounced spot checks and inventory controls by government inspectors. Pharmaceutical products are not patentable in Venezuela, only the processes for their manufacture. Trade names can be registered and are protected.

Aside from improvement and enlargement of the existing plants, no marked increase in pharmaceutical manufacturing is expected. The production of fine chemicals, active ingredients, antibiotics, alcohols, and serums is not considered economically feasible in Venezuela.

Soaps, Cosmetics, and Toilet Preparations

Venezuela is practically self-sufficient in the manufacture of soaps, cosmetic products, and toilet preparations. The industry has about 95 manufacturers with approximately 6,000 employees. Domestic production is protected by high tariffs. Imports consist mainly of bulk products for local processing, perfumes, essential oils, and tensoactive agents.

Products included in this section are manufactured under license or by local subsidiaries of companies such as Avon, Helena Rubenstein, Max Factor, Mennen, Johnson & Johnson, Breck, Helene Curtis, Wella, Coty, Pamela Grant, Christian Dior, and others. The local detergent plants of Colgate-Palmolive and Procter & Gamble also produce their full lines of soaps and toilet preparations. Products are packed in locally made glass, plastic, and aerosol containers. The industry imports nearly all of its raw materials but is able to obtain locally ethyl alcohol, glycerin, tallow, palm oil, sulfonated alcohols, fatty acids, and caustic soda. Total imports for essential oils and cosmetics amounted to \$12.4 million during 1974.

Detergents and Waxes

It is estimated that 95% of the Venezuelan detergents industry is controlled by the two largest manufacturers, Colgate-Palmolive and Procter & Gamble. Other companies mainly produce detergents for the laundry industry and industrial cleaning and special compounds for the food processing and textile industries. A good part of the raw materials is imported, but important products that can be obtained locally are caustic soda, sodium silicates, and fatty acids. The production of detergents in 1974 is estimated at approximately 60,000 MT. Output is sufficient to supply the market, and the industry is protected by high tariffs.

Waxes for household and industrial use in liquid and paste forms are manufactured by subsidiaries of foreign manufacturers and local companies. S. C. Johnson, Shell Quimica, Dupont, and Union Carbide are some of the foreign-owned manufacturers. Local companies include Productos Cruz Verde and Industrias Superbrillo. Most raw materials are imported, except paraffin. Production of liquid waxes was estimated at 8 million liters for 1974; and production of wax in paste form, at 1,000 tons.

Other Chemical Products

Adhesives.—Venezuela produces a variety of glues and adhesives for industrial use. The largest firm, Adhesivos y Gomas de Venezuela, claims to manufacture nearly 150 different formulas. Bial Chemical produces contact cements, and Adhesivos

Table 6.—Production of chemical substances and products

(in thousands of U.S. dollars)

	1970	1971	1972
Essential industrial chemical products, including fertilizers			
Basic industrial chemical products (acids, bases, salts)	5,607	6,984	28,202
Semifinished chemical products for tinting (tinctures, pigments, etc.)	.....	.....	NA
Fireworks explosives	301	197	564
Fertilizers	128	1,098	23,190
Chloride industrial gases and other similar chemical products	7,275	7,350	NA
Dry ice	.....	216	NA
Resins, plastics, synthetic rubber, artificial and synthetic fibers	27,356	30,908	17,339
Insecticides, fungicides, and disinfectants	24,638	23,251	NA
Industrial chemical products, n.e.s.	8,243	9,210	NA
Total	73,548	79,222	69,205
Animals and vegetable oils and fats for industrial use			
Refining of industrial crude oils and nonedible vegetable animal fats	1,969	5,627	6,325
Subproducts obtained from nonedible seeds, oleaginous fruits and oils	2,442	3,358	NA
Total	4,411	8,985	6,325
Paints, varnishes, lacquers, and enamels	43,702	58,304	51,196
Pharmaceutical products, detergents, and toilet articles			
Medicinal and pharmaceutical products	76,654	94,580	103,203
Perfumes, cosmetics, and other toilet articles (soaps, lipsticks, deoderants, etc.)	90,906	121,484	105,971
Detergents, laundry soaps, and other products for laundry and drying	48,175	55,037	55,743
Total	215,735	371,101	264,917
Other chemical products			
Maintenance products (waxes, polishes, metal polishing products, etc.)	6,053	7,717	14,444
Albuminoid products and glues, preparing and fixation agents for textile industry	995	1,545	3,766
Chemical products for photography	0	10	963
Tinctures manufacturing	4,969	5,474	6,070
Candles and matches	9,850	10,073	16,979
Total	21,866	24,819	42,222
Grand total	359,261	442,435	433,955

Source: Estadísticas Industriales (P-4-2) Ministerio de Fomento.

Nacionales C.A. produces surgical tape. Coutennye manufactures a variety of glues for the leather industry, while another firm, Leros, makes carpentry and industrial glues. Production estimates for 1974 have been placed at 4,000 tons of adhesives.

Water Treatment Compounds.—Used as softeners or for decalcination and demineralization, these compounds are produced by Nalco de Venezuela, Magnus Chemical, Comercial Numara, etc. Another important company engaged in importing and formulating water-treating chemicals is Calgon Interamericana C.A.

Tar Products.—Roofing, water proofing, and anti-resonance compounds for use by automobile assemblers, all on a tar basis, are manufactured by Industria de Productos Asfálticos and Cindu de Venezuela. None is imported.

Essential Oils, Synthetic Flavors.—Domestic production of soft drink concentrates and some artificial and natural flavors has developed in recent years. Frutalis and Frica are engaged in the production of natural flavor extracts, while Concentrados Liquid, Concentrados Nacionales, Venezolana de Sabores y Aromas, and others produce or mix synthetic essences and flavors for foods and soft drinks. Health standards are high, and U.S. regulations are generally required for all food and beverage flavors. The industry uses locally produced citrus fruit and ethyl alcohol.

Plastics.—The development of the plastics industry has been quite rapid during the last 10 years. There were 223 manufacturers of plastic products in 1974, contrasted to approximately 50 in 1964. Chief products include industrial plastic articles, hoses, pipes, houseware articles, polyethylene bags, plastic packaging, foam, toys, acrylic sheets, plastic fabrics, and fiberglass boats. These products are protected by high import duties.

The main processes used by plastic manufacturers in 60% of all industrial production are plastic injection, extrusion, and blow molding. Secondary processes are plastic compression, electrofusion, rotational molding, vacuum molding, and hand lay-up. Equipment, supplied mainly by European manufacturers, has a high replacement rotation.

This industry has a total consumption of approximately 160,000 tons of chemical products. The chief items are polyvinyl chloride, 45,000 tons; polyethylene, 69,000 tons; polystyrene, 28,000 tons; polypropylene, 8,000 tons; and polyurethanes, 2,200 tons.

FINANCING THE PETROCHEMICAL SECTOR

Starting in 1960, financing for this sector has come, to a large extent, from government contributions and savings plans. The International Bank for Reconstruction and Development (The World Bank) and Manufacturers Hanover Bank Ltd. of England have also assisted financially. Export credits have been obtained from other banking

sources, for example, Banque Francaise du Commerce Exterieur, and the Italian Istituto Mobiliare. IVP has also used export credits from such foreign suppliers as Mitsubishi in Japan, Siemens and K.F.W. Hermes in Germany, and SNAM Progetti in Italy. As of 1975, most of the investment needed for the expansion of the petrochemical sector is expected to be provided by the FIV.

FUTURE PETROCHEMICAL DEVELOPMENT

The most important developments in this industry have been the changes in organization that will increasingly affect the operations of existing plants and plans for future development. One of these changes, the creation of a National Petrochemical Council, has been of paramount importance. The Council will oversee the planning, construction, and operation of future ventures and the reorganization and rationalization of existing ones. The Council is composed of the Ministers of Mines and Hydrocarbons, Finance, Development, Agriculture, and Planning; the Presidents of the FIV and the Institute of Foreign Commerce; the Director General of IVP; and delegates from both the Federation of Chambers of Commerce and the Confederation of Workers. The Council is headed by the Minister of Mines and Hydrocarbons.

According to the document, the National Petrochemical Council would be responsible for developing the broad but detailed National Petrochemical Plan. The Council would be the repository of statistical information on the types and quantity of petrochemical production and would offer its opinion on the viability of future plant construction or expansion. In estimating the feasibility of proposed projects, the Council would consider such factors as domestic requirements and the international market. It would recommend the most advantageous form of investment, be it totally Government, joint venture, or wholly private, including foreign as well as national capital participation. It would advise the Government on pricing policies for domestically and internationally marketed petrochemicals. The Council would also be empowered to contract for studies or other activities it deems necessary. One limitation specifically articulated is the policy of conservation of hydrocarbons and the careful exploitation of materials that possess energy potential.

The manufacture of certain basic and strategic products would be reserved exclusively to state-owned enterprises for the purpose of rationalizing the industry. These products are the following:

- Acetylene
- Ammonia
- Naphthalene
- Ammonium nitrate

- Nitric acid
- Explosives
- Methanol
- Urea
- Ethylene
- Monoammonium orthophosphate
- Superphosphates
- Benzene
- Butadiene
- Xylene (ortho, meta, para)
- Diammonium orthophosphate

Under certain exceptional conditions, private capital could be permitted in these enterprises if, for example, the potential investor had technical or other valuable intangible contributions to make. In these cases, State participation would have to be at least 80%; and assurances would have to be made that the State is proportionally involved in the planning, administration, and marketing activities of the enterprise. The private interests would have to pay in proportion to equity ownership, contribute the desired technology, and agree to place production on the international market. Private investors also would be requested to train local personnel in plant operation procedures. The contractual life of any association between the State and private foreign capital would be for a maximum of 15 years, at which time the foreign partner's shares would be bought by the State at book value.

A second group of derivative products may be manufactured by joint-venture enterprises; private capital may contribute no more than 49% of the total investment, with the State holding the remaining 51%. These joint-ventures with majority State capital participation may in special circumstances sign management contracts with private companies to ensure efficient operation. The products in this group include:

- Adipic acid
- Styrene
- Acrylonitrile
- Adiponitrile
- Cyclohexane
- Cyclohexanol
- SB rubber
- Polypropylenes
- Tripoliven C.A., and
- Sulfuric acid
- Bioproteins
- Dimethyl terephthalate
- Phosphoric acid
- Ethylene glycol
- Caprolactum
- Ethylene oxide
- Propylene oxide
- Chlorine, chloritic acids, and hypochlorides
- Caustic soda

Vinyl chloride (MCV)
Ethylene dichloride
Terephthalic acid
Ethyl benzene
Di-aminic hexamethylene
SAN and ABS polystyrenes
Cyclohexanon
PB rubber
Low density polyethylene
High density polyethylene
Methyl metaacrylate
Cuminc phenol

In the third group, the private sector may manufacture those further derivatives that are economically and technically feasible. According to the Development Plan guidelines, up to 49% foreign capital would be permitted if accompanied by technical or marketing expertise.

The Government's proposal also envisages the creation of a state holding company that would be authorized to have domestic and foreign subsidiaries. The company's capital could come from either the FIV or other government sources linked in some way to the development of the petrochemical industry. The subsidiaries would be either creations of the parent company or acquisitions from among the existing operations. The ownership formula would conform to the conditions previously described. The new state enterprise would also be empowered to combine with multinational companies in foreign countries as the Council sees fit. In addition, the new holding company would absorb the operations of the IVP, which for the last 23 years has dominated the petrochemical activities. The document proposes that IVP oversee its own demise by converting its component subsidiaries into corporate entities whose shares would be turned over to the new enterprise. After all such transfers were complete, IVP would cease to exist. In the meantime, the Institute would remain responsible for the efficient operation of its subsidiaries.

Additional Projects

The Development Plan also includes the following projects:

1. Aromatics complex (BTX): IVP is planning to construct a BTX complex at Paraguna, Falcon State. Raw material would be naphtha produced by Shell's Cardon refinery. Produced would be benzene, toluene and xylenes. The total investment would be on the order of \$570 millions.
2. Additional olefin plant: In addition to the new olefin complex scheduled for El Toblazo, another installation is being considered for

Oriente. The production of this latter plant would be primarily for export. The plant would cost about \$605 million.

3. Ammonia and methanol plants: Construction is planned in Monagas of a complex for the production of ammonia and methanol. An expenditure of some \$227 million is expected.
4. Petroleum bio-proteins: Somewhat removed from traditional petrochemical development are the plans to construct a plant with a 105,000 MT per year capacity to extract N-Paratives from gas oil. Also there is to be a 100,000 MT per year plant to produce yeast with a 60% protein content. These investments are expected to total \$118 million.

It is important to note, however, that of the total Bs 10 billion to be invested in these miscellaneous projects, only Bs 2 billion are actually scheduled to be disbursed between 1976 and 1980 according to the Development Plan.

Sales Opportunities for U.S. Suppliers

Due to the nature of the chemical industry, most purchases are made on a turnkey basis. Therefore, the best opportunities are for specialized engineering and consulting companies, including management consultants. Excellent marketing opportunities for replacement of equipment and spare parts also exist. Some of the lines considered to have the highest potential are the following:

- Chemical process control instruments (see below)
- Pumps
- Compressors
- Chemical laboratory instrumentation and apparatus
- Special tanks
- Boilers
- Valves
- Gas compression plants and parts
- Chemical heaters
- Dry chemicals packaging equipment

In addition, the following goods are needed by the chemical products industry.

- Powder mills
- Mixing equipment
- Plastic extrusion, injection, and blowing equipment
- Aerosol valves
- Canning equipment
- Polyethylene bag manufacturing machinery

Because of the large investments in new chemical and petrochemical facilities, virtually all types of

process control instruments will be in demand in the 1975–80 period. In general, mechanical and pneumatic systems will be in greatest use, although analog electronic systems are gaining greater acceptance. Direct digital control computer systems are likely to be used in a few of the larger projects.

Instruments expected to offer particularly good sales potential include:

- Stroboscopes
- pH meters
- Hygrometers
- Reference and conductivity cells
- Turbidimeters
- Power converters
- Signal converters
- Medium-interface converters
- Transmitters
- Pneumatic analog controllers
- Data loggers, annunciators, and secondary transducers
- Analog recorders
- Analog panel meters
- Liquid level and flow regulator valves
- Solenoid valves
- Switches, dampers, and rheostats
- Bimetal and glass-column thermometers
- Thermoelectric pyrometers
- Manometers, barometers, strain gages, and piezoelectric devices
- Diaphragms, bellows, and bourdon tubes
- Rotameters, orifices, nozzles, and venturi tubes
- Mass, magnetic, and positive-displacement flowmeters
- Online oxygen analyzers, infrared spectrometers, and automatic titrators
- Online gas chromatographs
- U-tubes and densitometers

6 The Mining and Basic Metals Industries

Venezuela has embarked on a program of impressive scale to become a major exporter of basic metal products instead of remaining a large importer of them. In the government steel industry alone this effort will involve an investment of at least \$10 billion over the next 10 years. In this period of time steel production is to rise from the present production capacity of 1 million metric tons per year to an annual capacity of 15 million tons, surpassing Mexico and Argentina and approaching Brazil's projected total of 20 million tons. Likewise, a planned expansion of Venezuela's aluminum industry, involving an investment of at least \$160 million, should make it the largest in Latin America by 1980.

Consistent with its policy of industrial integration in its broadest sense—encompassing natural and human as well as financial resources—the Venezuelan Government decided in 1974 to retrieve the country's mineral deposits from foreign concessionaires. This was not a negative nationalistic gesture, but an attempt to mobilize resources such as iron ore and coal for the further industrial development of the country.

Although there will be some investment in mining over the next few years, it will be restrained in comparison with that in the metals industry. In the case of iron ore, the restraint is due to a deliberate government policy of conservation to assure an adequate supply of this raw material for the steel expansion program.

MINING

Iron Ore

On December 31, 1974, the Venezuelan Government cancelled all previous iron ore concessions and reserved to the State all future mining of iron ore. All facilities, equipment, and other goods of the concessionaires were sold to the semi-autonomous regional development agency Corporacion Venezolana de Guayana (CVG).

That the iron ore nationalization proceeded in an unusually smooth fashion is indicative of the fact that the Venezuelans are aware of their continuing need for technical and marketing assistance from the former concessionaires. They also wanted to emphasize the pragmatic, non-ideological nature of their actions.

In actual practice there has been little change in the operations of the mines. The same workforce and managers continue to work the 8,600 hectares (1 hectare=2.47 acres) in El Pao that formerly belonged to the Iron Mines Company (a subsidiary of Bethlehem Steel), and the 8,093 hectares in 18 concessions in the Heres District of Bolivar State that belonged to Orinoco Mining (a subsidiary of U.S. Steel). The two companies have a 1-year management agreement to provide a continuity of operation in the transition period. They have also signed a technical assistance agreement in the areas of maintenance, engineering, purchasing and local planning for an additional 2 years.

Forward iron ore supply contracts have been signed with both U.S. Steel and Bethlehem to assure these firms a predetermined but declining percentage of total ore production as consumption in Venezuela increases. Similar contracts have been signed with several European firms. These contracts may prove to be more advantageous to the Government than to the firms, given the excess in the supply of iron ore that has been experienced worldwide this year. Iron Mines, for example, decided to renegotiate its contract to reduce its purchase commitment from 3 million to 1.5 million metric tons per year (1 metric ton=1.1 short tons).

Although the earnings from these exports are considered important and have their place in CVG budgeting for the next few years, they are not an overriding consideration. The Venezuelan Government has adopted a policy of conservation of iron ore reserves. It intends to hold total production at current levels (i.e., not to exceed 26 to 28 million metric tons per year) for the indefinite future and

eventually to absorb all of this production in a vastly expanded local steel industry.

According to the President of CVG there exists in the Guayana region 2.5 billion tons of high grade ore (with a Fe content averaging 60%) and an additional 7.5 billion tons of low grade deposits (40% Fe). The more conservative figures of the Ministry of Mines and Hydrocarbons, on the other hand, show proven national reserves of 1.78 billion tons. This figure is broken down by deposit in Table 1. Most of these deposits lie within 200 kilometers of Ciudad Guayana.

The former Orinoco concession area includes the very large and pure Cerro Bolivar deposit, while the Iron Mines concession area has iron ore that is relatively high (up to a combined 3%) in impurities (bauxite, silicon, titanium, etc.). Even though there is a washing plant to reduce these impurities, this latter ore has to be mixed with a higher quality ore before it can be used to make steel. These two concession areas, which accounted for about 96% of the total 27 million tons of ore mined in 1974, will continue to be mined at the same rate. Given the combined total of 832 million tons in reserve, the deposits can thus be expected to last another 30 years.

The remaining iron ore deposits in the country, which make up just over half the total, will be held in reserve and not worked on a large scale. Press reports indicate that in 1974 SIDOR, in the name of CVG, extended for 5 years its contract with the Cia. Wells de Venezuela to work the rich San Isidro deposit in a rather limited, exploratory way. Production is not expected to exceed 50,000 tons of ore per month. The contract with Wells, a firm that has majority U.S. capital, appears to be an exception to the nationalization law.

Consistent with this "no growth" policy of the Government, no major investment is planned in

iron ore mining in the next few years, with the exception of a \$40 million amplification of the existing dry screening plant, a project being developed by Orinoco Mining and U.S. Steel under the technical assistance agreement.

Coal

Although very large reserves of coal have been known for some time to exist in Venezuela, they have been mined up to now in only a limited, sporadic way. Generally speaking, the importance of these deposits has been eclipsed by the more dynamic and profitable petroleum industry. Coal's usefulness as a fuel for local use has been further overshadowed by the easy availability of natural gas and hydroelectric power in most parts of the country.

As recently as 1974, total coal production amounted to only 57,086 metric tons. It was only with an appreciation of the fundamental importance of coal in Venezuela's expanded steel industry investment program, together with the quadrupling of the world price for coal, that real attention began to be paid to the country's reserves. A National Coal Industry Council (Consejo Nacional de la Industria del Carbon) was created in September 1974. It was charged with the responsibility of drawing up a Draft Plan for the Development of the Coal Industry. The Plan is to treat all aspects of coal production and marketing (local and international) and make recommendations for the installation of specific plants to the development of both the coal and steel industry in the country as a whole. No date has yet been announced for the completion of this Plan.

Under the direction of the Ministry of Mines and Hydrocarbons, the Council has already begun coordinating coal exploration and mining through the respective development corporations of those regions where this activity has been carried on over the years. In addition to these regional development corporations (CORPOANDES, CORPORIENTE and CORPOZULIA), other members of the Council are CORDIPLAN and SIDOR.

Venezuelan coal is considered to be of relatively recent geological formation—sub-bituminous lignites of a volatile content high enough for producing gas. Some of the coal has been shown to have an acceptable coking quality, and the National Coal Industry Council now estimates a total of 200 million tons of reserves of coking coal. It is generally thought, however, that Venezuelan coal would have to be mixed with imported coal of higher coking quality if used on a large scale for metallurgical reduction purposes.

The three main deposits in the country are the Naricual, the Guasare and the Lobatera. They in turn are part of larger carboniferous basins: the

Table 1.—Proven reserves of iron ore, 1973

	<i>Millions of metric tons</i>	<i>Percent of total</i>
Orinoco Mining Company	763	42.8
Cerro Bolivar	292	—
Cerro Altamira	152	—
Cerro La Estrella y Cerro Redondo	165	—
Cerro Arimagua	136	—
Cerro Toribio	18	—
Iron Mines Company	69	3.9
San Isidro	350	19.6
Los Barrancos	215	12.1
Las Pailas	80	4.5
San Joaquin	73	4.1
Maria Luisa	232	13.0
Total Proven Reserves	1,782	100.0

Source: Hierro y otros datos estadísticas mineros Oficina de Económica Minera, Ministerio de Minas eltidrocentro 1973.

Oriental, the *Zuliana*, and the *Andina*, respectively. The Naricual deposit, in the State of Anzoategui, has proven reserves of about 11 million tons of coal; further reserves approaching 60 million tons are thought to exist. CORPORIENTE, the concessionaire, reactivated the firm C.A. Minas de Naracual (CAMINA) to explore, mine, process, transport, and market the Naricual coal. In particular, the firm is charged with constructing a coking plant and marketing both the coke and its byproducts (coke gas, ammonium sulfate, and raw tar and pitch).

In January 1974, CAMINA signed a 3 year technical assistance contract with Montan Consulting, a German firm, to aid in all aspects of the operation of the mine, including the training of personnel. Montan was also charged with the design and writing of specifications for a coal washing plant as well as for the coke plant, which will have a capacity of 500,000 tons a year. On the basis of this plan a formal request was made of the Venezuelan Investment Fund (FIV) for most of the roughly \$50 million needed for the project. The project also involves enlarging the dock, repairing the rail system and other infrastructure improvements.

By the end of 1975 about 300 tons of coal were to be produced daily at the Naricual Mine. It is hoped that by 1978 the output can be raised to a full 1 million tons per year. This production is eventually to be absorbed by a considerably enlarged steel industry, with any excess being used to substitute for gas in the country's thermoelectric plants. Until the coke and coal-washing plants are completed, however, Naricual coal will be sold on the world market.

About three-quarters of all current coal production in Venezuela comes from the Lobatera mines in the State of Tachira. Proven reserves at this site exceed 20 million tons, with as much as 100 million tons thought to exist in the entire Andina basin. The Lobatera site is being both strip mined and mined underground with a fair degree of mechanization. Since this area is somewhat removed from sources of petroleum, the coal has been able to compete successfully with petroleum as a source of fuel and has been used as such by the local cement, lime, and ceramic industries. As of the beginning of 1975, CORPOANDES, the concessionaire, was completing the installation of four Solera furnaces of Australian design with a capacity of 9.2 tons of coke per day. If the results of this operation are satisfactory, another 80 ovens will be installed to reach a daily capacity of 200 tons of coke.

CORPOZULIA, the concessionaire for the Guasare mine in the State of Zulia, has invested about \$5 million in preliminary studies of these deposits.

A contract was signed with the German firm Eissenbau Essen GmbH. to provide technical as-

sistance in the verifying of the size of the reserves and their physical and chemical nature. This study indicated a coal reserve totaling 1.5 billion metric tons in the *Zuliana* basin. Since this mining operation would be closely linked with the proposed Zulia steel project (see Basic Metals), the production of metallurgical grade coal is of highest priority. Production is not to begin until 1978 at which time an 8 to 10 million tons per year output is expected, most of which will be strip mined.

CORPOZULIA will be buying mechanical shovels in the 6 to 10 cubic meter range—multiple, rotary wheel types are not suited to conditions at the mine. Installation of a "carboduct" (coal pipeline) system is being considered. The United States is generally thought to be more advanced in open pit mining and should get a good share of this business. Certain types of mechanical shovels made by Poclain (France) have a strong hold on the market, however.

Although there is a trend in steelmaking around the world toward the direct reduction/electric furnace steelmaking process which does not need coking coal, there will continue to be a healthy demand for coking coal for use in existing and larger new steel plants that utilize sintering plant, blast furnaces, and basic oxygen furnaces.

Other Minerals

Coal and iron ore are the most important, but not the only minerals being mined in Venezuela. Gold and diamond deposits have been actively worked. A total of 529,467 grams of gold and 1,248,979 carats of low-grade industrial diamonds were mined in 1974. The Venezuelan Government in 1974 cancelled an existing contract with the German firm MINERVEN and acquired all its assets. It plans to make a \$30 million investment in a treatment plant at El Callao gold mine that will process 700 metric tons of gold-bearing quartz daily beginning the second half of 1977.

Other projected investments in the mineral area include a plant to process zinc from metal sulphurs. It would be located in Bailadores, State of Merida, near the only deposits of zinc and lead of commercial value known to exist in the country. The deposit has proven reserves of 906,000 tons of ore with a 16.3% zinc content and lesser amounts of lead and copper. The plant would have a yearly capacity of 33,000 tons of zinc metal, large enough to satisfy all domestic requirements. It has been reported that the Japanese firms Nisho Iwai and Dowa Mining have agreed to form a joint venture with CORPOANDES to mine this ore. There are also plans for a nickel mining venture in Aragua State in association with Le Nickel of France.

Of longer term interest are the large mineral deposits that are thought likely to exist in the heretofore unexplored southern region of Venezuela. In 1975 the Venezuelan Government began a detailed mineral survey, using sophisticated aerial photography techniques, of the section of the country below 7°80'9" latitude and east of 64°80'9" longitude.

BASIC METALS

The Venezuelan Government expects to convert its large, but clearly not inexhaustible, petroleum revenues into a metals industry of major proportions that will add value to local fuel and mineral reserves and be a solid, long term source of employment. Venezuela currently spends a great deal more on imported steel products than it earns through the export of iron ore, so there is a balance of trade deficit in this area that can be erased. Moreover, Venezuela has the potential to become a major net exporter to the world of both finished steel and aluminum.

The country has ample quantities of the fundamental elements of a metals industry: hydroelectric power, coal, natural gas, and iron ore. (The only raw material that will likely have to continue being imported for the foreseeable future is bauxite/alumina.) Venezuela is also fortunate to have all these elements—and more—together in the Guayana region, near navigable river access to the sea.

Steel

Drafting and coordinating the total, three stage 1974 to 1985 steel development plan (Plan Siderurgico Nacional) is the National Steel Council (Consejo Siderurgico Nacional), which reports

directly to the President of Venezuela. One of the functions of the Council is to evaluate the claims of the different Venezuelan states and regional development corporations to locate the steel plants in their areas. The Council also passes judgment on the joint venture proposals offered by foreign firms. The criteria applied in this selection process include the previous steel experience of the foreign firm, the level of technological transfer, the degree of Venezuelan participation in the project, the marketing expertise being offered, and the total value to be added to the final manufactured products.

SIDOR's Role in Steel

The firm that has been entrusted with carrying out the first stage of the National Steel Plan, and which is likely to at least oversee the remainder, is CVG's Siderurgica del Orinoco, C.A. (SIDOR).

Established by the Government in the early sixties, SIDOR took root, so to speak, about 80 kilometers from Ciudad Bolivar in Bolivar State on the Orinoco River. The original plant was designed to manufacture relatively simple products such as steel reinforcing rods, cast iron, seamless steel pipe and tubing, steel plate and bars, I and U beams, etc. But even in this limited product line, SIDOR has not been able to satisfy local demand. Venezuela needs, for example, about 500,000 long tons per year of steel reinforcing rods. Yet SIDOR can produce only 250,000 to 260,000 tons per year. Private steel producers can produce about half the difference, the rest must still be imported. (Estimates of production, importation, and local consumption of a variety of steel products is contained in table 2.)

SIDOR's product range was enlarged considerably by the completion in July 1974 of a rolled steel plant. As a result, SIDOR can now produce the flat

Table 2.—Production, imports and consumption of steel products, 1974-75
(in thousands of metric tons)

Products	Production		Imports		Consumption	
	1974	1975	1974	1975	1974	1975
FLAT						
Thick plates	70	80	9	3	79	83
Hot rolled plates and sheets	94	170	88	26	182	196
Cold rolled plates and sheets	45	200	165	21	210	221
Tin and chrome plated sheets	30	100	116	52	146	152
Total	239	550	378	102	617	652
SHAPES						
Reinforcing rods	360	475	190	145	550	620
Profiles	130	147	45	39	175	186
Wire rod	60	100	80	56	140	156
Total	550	722	315	240	865	962
PIPE						
Seamless	125	125	165	125	290	250
Welded ¹	205	250	50	25	250	270
Total	330	375	215	150	540	520
Grand Total	1,119	1,647	908	492	1,817	1,884

¹ To avoid double counting, welded pipe have been subtracted from the flat products figures since these flat products were used to make the pipe. Also, it is estimated that 5,000 tons of welded pipe were exported.
Source: Asociacion de Industriales Metalurgicos y de Mineria (Venezuelan Metallurgical and Mining Industries Association).

rolled steel needed to make durable consumer goods such as refrigerators, stoves, office furniture, and metal containers. The plant has a hot rolling capacity of 1.5 million tons per year and a cold rolling capacity of 600,000 tons. There is also an electrolytic tinning and a tin-free steel line with a production capability of 130,000 tons per year. Although all of these operations could be said to be still in the "start-up" stage there are already plans to expand them considerably within 3 to 4 years (see Table 3 for 1979 production goals).

The overall development strategy for the first phase of expansion of plant capacity is detailed in SIDOR's Plan 4 (1974-1979). The two most important goals of this expansion are (1) To increase SIDOR's production of raw steel through the installation of a complex of pelletizing plants, direct iron ore reduction plants, electric arc furnaces to produce liquid steel, continuous casting installations and systems for the storage and handling of raw materials, and (2) To enlarge SIDOR's rolling mill capacity, increasing the investment in already existing installations and incorporating new rolling mills.

The following description of specific projects is taken from that part of the *Resumen* (Summary) of SIDOR's Plan 4 dealing with increasing its raw steel production capacity.

Direct Reduction Complex.—Installation of two grinding and pelletizing units for fine iron ore, each one with the capacity to produce 3 million tons of pellets per year.

Table 3.—Current SIDOR production capacity and projected 1979 capacity
(in thousands of metric tons)

<i>Products and/or processes</i>	<i>1974</i>	<i>1979¹</i>
Sintering	600	600
Production of pig iron (electric furnaces)	920	920
Pelletizing	—	6,000
Steel making	1,200	4,800
<i>Semifinished</i>		
Primary rolling	1,000	1,000
Continuous casting of slabs	—	2,250
Rolling of billets	450	450
Continuous casting of billets	—	1,020
<i>Finished Products</i>		
Rolling of light shapes	120	120
Rolling of bars	220	720
Wire rod	30	330
Wire drawing	30	30
Seamless pipe	165	230
Soldered pipe	—	65
Centrifuge pipe	30	30
Hot rolled coils	1,500	2,100
Thick plates	160	350
Cold-rolled coils	590	800
Tin and chrome plated sheets	130	300

¹ At mid-1975, these goals were about seven months behind schedule. Source: Resumes Plan 4, SIDOR (CVG), 1974.

The process to be employed consists of grinding the ore into a very fine dust, which is then agglomerated through the use of disc or cylinder machines, with bentonite and lime as agglutinates.

The final phase of the process is the pyroconsolidation of the product in equipment forming part of a fluid bed or rotary kiln process.

Installation of 11 direct reduction units with a total production capacity of 3.84 million tons of reduced iron per year. In the direct reduction furnaces that are part of these units, the pellets produced in the pelletizing plants are converted into reduced iron upon coming in contact with reformed gas. This process is carried out without using metallurgical coke as an energizing and reduction agent. Instead, Venezuelan natural gas is used.

Electric Steel Furnace Complex and Continuous Casting Installations.—To meet the raw steel needs of SIDOR's production program, electric steel-making plants will be built to extend the capacity of the already existing Siemens Martin (open hearth) plant.

The new steel plants will be integrated into the continuous casting installations for steel billets and slabs as follows:

For the production and continuous casting of steel billets there will be installed four electric furnaces, each with a capacity of 150 tons, coupled with three continuous casting machines, each with six lines. The annual production capacity of each furnace will be about 300,000 tons of liquid steel. In the placement of this equipment space will be set aside to cast in place polygonal-shaped ingots. These ingots are to be used to manufacture seamless pipe.

For the making and continuous casting of slabs there will be six furnaces of 200 tons capacity each coupled with three continuous casting machines, each with two lines and a capacity of 250 tons per casting. The annual production of each furnace will be about 396,000 tons.

Lime Plants and Auxiliary Installations.—To complement these new steelmaking facilities it will be necessary to build a calcination plant with an annual capacity of 240,000 tons. Also to be installed are a pollution control system, a pneumatic mail system, a testing laboratory, a scrap iron yard and facilities for the handling of pellets and flux.

All of the plants and facilities encompassed in the above basic steelmaking plan will be integrated with the existing facilities of SIDOR into a single productive process.

Expansion of Rolling Mill Capacity.—SIDOR's installed rolling mill capacity will be enlarged by

means of modifications of, and additions to, existing installations and through new rolling units that will be incorporated into the production process. The new facilities will provide for an iron and steel plant production capacity able to meet the projected demand for its rolled products through 1983, at which time it will be producing about 4,000,000 tons per year.

The specific projects to be implemented in the three different phases of the expansion of the rolling mills, as also outlined in the *Resumen* of SIDOR's Plan 4, are as follows:

Flat Products Plant.—Installation of a new tin-plating line with a production capacity of 170,000 tons per year. To complement this facility additional investments will be needed in a cleaning and continuous annealing line with a 130,000 ton capacity, as well as in three cutting lines (two to be added to the new facility and the other to process part of the existing line's production.)

To satisfy the requirements for cold rolled sheets and coils it will be enough to increase the motor potential of the existing reduction train; by doing this it will be possible to increase to 800,000 tons per year the capacity of the rolling mill. To double the capacity of the deoxidizing facilities and the annealing furnaces, investment will be made in a second deoxidizing line able to process 600,000 tons of coil annually and in new battery of annealing furnaces with a production capacity of 300,000 tons per year.

In order to increase to 2.1 million tons annually the capacity of the semi-continuous hot mill it has been decided to complement existing equipment by installing a third overheating furnace, a sixth finishing train and a third coil winder. Furthermore, investment is planned in a new rolling mill for thick plate that should begin production in 1980. Before building this rolling mill it will be necessary to modify the existing finishing facilities, i.e., the thermic treatment furnaces, a shearing machine, straighteners and cooling tables.

Non-Flat Rolling Mills.—A wire rod mill will be installed with a 300,000 ton per year capacity with a new bar mill with a 500,000 ton annual capacity.

Tubular Products.—To satisfy tubular product needs it will be necessary to modernize the seamless pipe factory. Furthermore, there will be a welded pipe line with the capacity to produce up to 65,000 tons per year of pipe with a diameter of between 6 and 24 inches.

The first stage of the National Steel Plan, SIDOR's Plan 4, has already begun. As detailed above Plan 4 was designed to be largely completed by 1978 and fully operational by 1980. However, the

schedule was about 7 months behind. The second stage, also likely to be carried out by SIDOR, will involve the installation of steel works with an additional capacity of 5 million metric tons per year to be completed by 1980. The bulk of this production is expected to be semi-finished steel products for export. The details of this stage of expansion are not yet known, but various international firms have made proposals that are being studied by the Government. The plant is expected to be located near SIDOR's present facilities in Ciudad Guayana.

Plans for the third stage of the national steel industry development program are even less clearly defined. What is known is that the capacity to be reached is also an additional 5 million tons of steel production per year, virtually all for export. A group of industrialists from the state of Zulia has been lobbying for the construction of these facilities in their region, near the important Guasare coal deposits. A spokesman of the National Steel Council has stated that there are in fact "firm" plans to locate the plant in Zulia.

Venezuelan industry sources estimate that these steel production plans will involve an expenditure of almost \$1,000 for each metric ton of annual production capacity installed. Of this figure about 60% is needed to produce a semi-finished product and the remainder to bring it through the finishing stage. These figures do not include necessary infrastructure costs. Considering the fact that the first stage of the National Steel Plan (SIDOR's Plan 4) involves the manufacture of semifinished products, the investment required will be on the order of \$2.5 billion. The additional increments of 5 million tons of capacity will cost more, largely due to expected increased costs of the imported equipment. Thus, it is estimated to cost at least \$10 billion to reach the goal of 15 million tons of annual steel production by 1985.

Of the total \$2.5 billion programmed to be spent under the first stage, SIDOR itself will invest almost \$1 billion another \$1 billion will come from the Federal Government, and \$700 million from the Venezuelan Investment Fund (FIV). As shown in table 4, SIDOR planned to spend just over \$466 million in 1975.

The expenditures planned for 1975 were not all carried out due to delays in the bid process. The most important part of this process was the bidding to supply two of the electric reduction furnaces, the continuous slab mill and the steel billet mill. The major contenders in this bidding were U.S. Steel and a German consortium (GHH/DEMAG).

The Human Factor.—The potentially most serious bottleneck in this extraordinarily ambitious steel industry development plan is the human resources

Table 4.—SIDOR's Plan 4—Schedule of expenditures
(in millions of Bolivars)¹

<i>Projects</i>	<i>1974</i>	<i>1975</i>	<i>1976</i>	<i>1977/79</i>	<i>Total</i>
STEELMAKING					
Pelletizing plant	13.44	250.88	271.95	90.73	627.00
Direct reduction plants	137.74	441.68	398.84	177.84	1,156.10
Electric furnaces and continuous casting	35.34	664.12	718.08	240.66	1,658.20
Total	186.52	1,356.68	1,388.87	509.23	3,441.30
FLAT					
Expansion of hot rolling mill	38.08	39.76	34.16	—	112.00
Rolling of plates	—	—	—	291.80	291.80
Plate finishing line	40.90	45.90	39.16	9.04	135.00
Hot cutting line .....	.84	12.60	14.91	6.65	35.00
Deoxidizing line	3.12	46.88	55.49	24.75	130.24
Expansion of cold rolling line	8.50	8.88	7.62	—	25.00
Cleaning line	9.22	9.62	8.26	—	27.10
Annealing furnaces	15.74	16.43	14.13	—	46.30
Continuous annealing line	12.66	25.79	21.45	7.10	67.00
Temper roller	3.57	21.17	20.90	9.36	55.00
Cold cutting line	10.38	22.44	18.65	6.83	58.30
Coil winding line .....	.33	4.97	5.87	2.63	13.80
Tinplating line	23.17	47.19	39.23	13.01	122.60
Total flat products	166.51	301.63	279.83	371.17	1,119.14
NON-FLAT PRODUCTS					
Wire rod mill	53.62	63.31	54.00	15.27	186.20
Bar train	53.62	63.31	54.00	15.27	186.20
Spiral pipemaking plant	2.88	60.00	57.12	—	120.00
Modernization of pipe plant	4.80	100.00	95.20	—	200.00
Total non-flat products	114.92	286.62	260.32	30.54	692.40
Infrastructure and miscellaneous	5.51	78.30	78.30	127.89	290.00
Grand Total	473.46	2,023.23	2,007.32	1,038.83	5,542.84

¹ Bs. 1=U.S. \$0.23.

Note: As of mid-1975 these plans were about 7 months behind schedule.
Source: Resumen Plan 4 SIDOR CVG, 1974.

factor. SIDOR's plant and construction work force numbered 9,200 in 1975 and will have to reach about 15,000 by 1979. SIDOR was trying to add 200 engineers to its normal staff of 300, and will eventually need a total of 900 to carry out Plan 4. The firm is also likely to be given much of the responsibility for training people for the second and third stages of the National Steel Plan.

To meet this need for skilled manpower, SIDOR has set up a training center that now handles 250 apprentices at a time. It has also sent 130 employees to West Germany for training in the operation of the existing rolled steel facility. A few foreign technicians have been contracted where equivalent skills are clearly not available in Venezuela. But some industry sources maintain that, given the simultaneous push to develop other local industries in a major way, the goals of the National Steel Plan cannot be reached according to the present schedule without a change in Venezuela's immigration law that would permit the selective immigration of needed skilled labor and technicians.

Private Sector Activity

While the role of government entities such as CVG and the National Steel Council have been

growing in Venezuela, the private firms in the metallurgical industry continue to be in a very healthy, independent position. Although there is likely to be an industry trend toward consolidation (the disappearance of marginal, under-capitalized operations) over the next few years, the leading private firms are not under pressure to associate themselves with the Government. Rather, these firms expect to grow on their own at roughly the same rate as the government firms and mixed enterprises.

There is a total of about 3,000 firms in the Venezuelan metallurgical industry, of which only 1,000 are of any size. The most important of the latter group of firms are members of the *Asociacion de Industriales Metalurgicos y de Minería de Venezuela-AIMM* (the Venezuelan Metallurgical and Mining Industries Association). Although the activities of these firms are quite diverse, the 12 firms shown in table 5 are among the leaders in the private sector of Venezuelan metallurgical industries (steel and aluminum). Unfortunately, no meaningful capital investment or comprehensive production figures are available on these firms, but they represent a considerable share of the total non-government industry on both counts.

Table 5.—Leading Metallurgical Firms

<i>Name of firm¹</i>	<i>Products</i>
ALCAN de Venezuela, S.A.	Aluminum tubes, extrusions and sheets
Aluminio del Caroni, C.A. (ALCASA) (2)	Aluminum
CABEL, S.A.	Electric and telephone cables
CONDUVEN, C.A.	Tubing, fence parts
Dominguez & Cia., S.A.	Metal containers, and lithographic plates
Industria Mecanica Orion, S.A. (IMOSA)	Construction and other industrial equipment, hot galvanization
Industria Metalurgica Van Dam S.A.	Metal fabricating, boilers
LAMIGAL, S.A.	Steel sheets, galvanization
Metalurgica de Laminados Nacionales, S.A. (METALANCA)	Steel shapes
Siderurgica del Turbio, S.A. (SIDETUR)—Barquisimeto	Common and special steels
Siderurgica Occidental, C.A. (SIDEROCA)—Maracaibo	Iron products, tubing
Siderurgica Venezolana, S.A. (SIVENSA)	Iron products, steel reinforcing rods, plates, wire rod, etc.

¹ All with executive offices in Caracas except where otherwise noted.

² This firm has 50% Venezuelan Government participation through CVG.

Source: U.S. Department of Commerce Survey Team.

Since its creation in April 1974, in its role of coordinating the development of the industry, the National Steel Council has approved 10 private projects of importance to the local steel industry. They are summarized as follows:

SIVENSA—(First Stage): The firm Siderurgica Venezolana, S.A. (SIVENSA) will be installing in various stages a plant in Ciudad Guayana to produce steel ingots using iron briquettes produced by the plant formerly owned by the Orinoco Mining Company. First stage capacity is 150,000 metric tons per year, and it will be used to supply the firm's existing facilities for producing reinforcing rods, wire rods, and plates. Machinery and equipment costs will be \$7 million and as of mid-1975 purchasing had begun.

ACELCAR—The recently formed firm Aceria Electrica del Caroni (ACELCAR) plans to install in Ciudad Guayana a plant to produce special steels: Bars, ingots, billets, and wire rod. Annual capacity will be 480,000 tons per year of fine steel ingots. Total investment will amount to \$133 mil-

lion. Financing is to come from the firm's suppliers and from various commercial banks.

WIRECO—The firm WIRECO Venezolana C.A. has a project to produce steel wire with a high carbon content to be used in the firm's existing wire rope manufacturing plant. The new plant, which will be located in San Joaquin (State of Aragua), will involve the expenditure of \$2.7 million in buildings, equipment and installations.

PROACERO—The company C.A. Venezolana Procesadora de Acero (PROACERO), still being formed as of mid-1975, plans to build a plant to produce steel tubing of diameters between 7 and 20 inches, soldered by the ERW (electrical resistance weld) technique. The plant, which will be located at Punta Gorda, Municipio Cambimas, in the Bolivar District of the State of Zulia, will have a yearly capacity of 350,000 metric tons. Expenditures on land, machinery and equipment are expected to amount to almost \$50 million.

IMOSA—The company Industria Mecanica Orion, S.A. (IMOSA) plans to install at Puerto Cabello two new lines for the manufacture of welded pipe with diameters ranging from 20 to 60 inches. One line will employ the sheet bending and longitudinal soldering method and the other the spiral soldering technique. The first-mentioned welding train will have an annual capacity of 70,000 tons and the second, 60,000 tons. The purchase of machinery, equipment and land will involve an expenditure of about \$7.5 million. The project will be largely self-financed.

CONDUVEN—The firm CONDUVEN C.A. plans to install a welded pipe line. Tubing of diameters between 2 $\frac{3}{8}$ and 10 $\frac{3}{4}$ inches will be made by the electric resistance weld technique. The plant, which will be located in La Victoria (State of Aragua), will have a capacity of 100,000 tons by 1978. The total investment in land, machinery, and equipment is expected to be in excess of \$18 million. Financing will come in large measure from the Bank of Venezuela, the Sociedad Financiera Venezolana, S.A. and other banks.

ARMCO—The company ARMCO Venezolana C.A. has a project to install a facility to manufacture welded pipe of diameters between 2 and 6 $\frac{5}{8}$ inches. Located in Ciudad Guayana, the plant will have an initial annual capacity in 1977 of 15,000 metric tons, rising to 30,000 tons in 1982. Investment in machinery, equipment and land is estimated at \$2.24 million. The project will be largely self-financed.

ARRAVEN—The firm Venezolana de Arrabico C.A. (ARRAVEN), in the process of being formed in early 1975, plans to produce pig iron for use

in foundries. The plant, which is to be built in the State of Aragua, will have a capacity of 25,000 tons per year. An expenditure of \$2.17 million will be made for equipment, buildings, and installations. Financing will come largely from a loan from the CVF.

SIVENSA—(Second and third stage): The second and third stages of SIVENSA's expansion include the installation of a pelletizing plant, a direct reduction plant and a continuous casting plant that will permit an expansion of annual production of 400,000 metric tons per year of steel billets. Investment in equipment and installations is estimated at \$46.7 million. Financing is to come from shareholders of the firm, the Eximbank and various commercial banks.

SIDETUR—The firm Siderurgica del Turbio, S.A. (SIDETUR) of Barquisimeto has a project to increase its production capacity to 100,000 metric tons per year of steel with unusual chemical properties and/or dimensions. The funds to cover this \$26 million investment are being requested from the Fondo de Credito Industrial.

Foundry Industry

While there are currently more than 120 iron foundries in Venezuela, 95% of them are very small operations, each with an annual production that does not exceed 800 to 1,200 tons. The competition among foundries is strong since they all manufacture more or less the same articles and sell them directly to the consumer.

The large users of iron castings are the local steel, auto, petroleum, cement, and transportation industries. But they reportedly are reluctant to use local products to any great extent. It has been estimated that Venezuelan industry as a whole imports 90% of their casting needs. The majority of local production consists of water and drainage pipes. Even the more important foundries are said to be at least 10 years behind the U.S. in terms of technology.

It has been clear for some time that the foundry industry needs to be consolidated and modernized. As a result of the convergence of two important developments (1) the government-mandated increase in the national content of locally-produced vehicles and (2) the projected increases in local production of two important and hitherto insufficient raw materials—pig iron and coking coal—a dramatic restructuring and modernization of Venezuela's foundry industry is expected over the next few years.

Aluminum

The largest aluminum factory in Latin America is Alumino del Caroni, C.A. (ALCASA), a joint

venture between Reynolds Aluminum (50%) and CVG (50%). In 1973 it completed its Phase III expansion program to reach an annual aluminum production capacity of 50,000 metric tons. The ALCASA plant now uses as much electric power as the entire city of Maracaibo. The main plant is located in Ciudad Guayana, within sight of the SIDOR steel plant and close to ample hydroelectric power. A foil-making facility is located in Guacara.

ALCASA already supplies all the basic aluminum (ingot) needs of Venezuela and a good part of those of Colombia and Peru. In fact, 30% to 40% of total production is currently exported. There is, however, a deficit in Venezuela as far as roller products are concerned, a deficit that has been covered by imports. The main local users of aluminum are the electrical wire and cable producers and the construction industry.

ALCASA has now entered Phase IV, an investment program that will increase total aluminum production from roughly 50,000 to 120,000 metric tons per year and expand rolling mill capacity from 15,000 to 25,000 tons annually by 1977. The project is expected to cost at least \$160 million, of which about half has been granted by the Venezuelan Investment Fund (FIV).

The Venezuelan Government has approved the project of VENALUM S.A., which is a joint venture between CVG (80%) and a Japanese group (20%). The VENALUM plant is to add a further 280,000 tons to the country's annual productive capacity to reach the goal of 400,000 metric tons by 1980.

The project, which is expected to cost about \$475 million, will be carried out in various stages. The first stage, producing 75,000 metric tons of primary aluminum per year, is scheduled to begin operations in 1977. The second stage, which will increase this capacity to 150,000 tons, is not expected to be operational before 1979.

ALCASA will play a major role in getting the VENALUM plant started. In fact, ALCASA will operate it, at least in the beginning, and Reynolds International will serve as the construction contractor. The Japanese participation in VENALUM was agreed to, with the understanding that at least half the plant's output would be shipped to Japan. Purchasing decisions on equipment sourcing will be made by ALCASA. The financing of the project is expected to come, in large part, from the FIV.

Regarding equipment, it should be noted that in recent plant expansions, ALCASA has been buying the bulk of its electrical equipment from Japan and most of its mechanical equipment from the United States. Electrical equipment is most important in the reduction process, and mechanical equipment in the rolling operations.

CVG has also entered into agreement with a Swiss firm to set up an experimental plant to transform imported bauxite into alumina. The plant employs the Bayer process, which depends upon large quantities of caustic soda. To meet completely the demands for alumina of an aluminum industry with an annual capacity of 500,000 metric tons, an alumina plant with a capacity of 1 million tons per year would be necessary. A project of this scale would require an investment of about \$250 million.

MARKETING TO THE SECTOR

The fact that all of the development of the mining industry and most of the development in basic metals is being carefully planned by the Venezuelan Government has several implications for the potential U.S. supplier of equipment and/or services. The agencies of the Government, such as SIDOR and CVG, that are charged with carrying out entire stages of the development plan of a particular industry usually have on their staff technicians who are familiar enough with a particular industry to know the important firms worldwide from which they might buy equipment or contract for services. There is a tendency for these technicians to favor the established names with proven experience. In fact, solicitations will sometimes be closed to all except well-known firms. Thus a newly-formed supplier firm, or an established firm going into a new line of activity, has to make an extra effort to acquaint government purchasing decision-makers with the advantages of its equipment or expertise.

In many cases the installation of a particular industrial process will be contracted out entirely to a foreign company. While the nationality of that company does influence equipment purchasing decisions, it is not the most important factor.

In the metals field alone there have been recent instances of Japanese contractors buying entirely U.S. equipment and U.S. contractors choosing predominantly Japanese equipment.

It is customary for the supervisory Venezuelan Government entity, CVG for example, to pass judgment on the equipment recommendations of the foreign contractor. Generally speaking, CVG would want the best possible equipment, provided

it is suitable to Venezuelan conditions (e.g., that it is not so technical that it would pose maintenance problems that local engineers are not equipped to handle) and provided that the price is not excessive.

Venezuelan industry sources report that U.S. suppliers have been particularly competitive in the last year or so in terms of price. This helped them recover from the Germans, French, Italians, and Japanese some of the ground lost from the time when the equipment used in the sector was primarily American. U.S. equipment is generally considered to be more reliable in terms of performance and availability of spare parts, although some Venezuelan firms reported a deterioration on both counts in the case of some U.S. manufacturers that were operating at capacity during the 1973-74 period. Through mid-1975, U.S. suppliers had been considerably underbid—by up to 40% in the case of the Japanese—and the advantages of U.S. equipment rarely managed to outweigh this price disadvantage. Since then, the United States has been underbid by only about 10% on the average, a price differential that can be more easily accepted by those managing the purchasing budget of a large project.

Purchasing decision-making in the case of large government projects is usually divided among (1) the respective government entity, (2) the local office of the foreign construction contractor and, (3) the home office of the contractor. A comprehensive marketing effort would involve approaches at these three points.

A very good way to reach the more important private firms in the Venezuelan minerals and basic metals sector is through the Venezuelan Metallurgical and Mining Industries Association:

Asociacion de Industriales Metalurgicos
y de Minería (AIMM)
Esquina de Puente Anauco
Edificio Camara de Industriales
Caracas
Telephones: 55-03-56
55-53-20
55-53-77

The Association's monthly magazine, *Venezuela Metalurgica y Minera*, is widely read in the industry and accepts advertising.

7 The Automotive Industry

A formidable leap forward is about to take place in the Venezuelan automotive industry. Vehicle production will shift over the next 5 years from being essentially an assembly operation to one of primarily local manufacture. The most important step in this change will be the production in Venezuela of the power train (the engine, transmission and axle) and all related subcomponents. Meeting this goal involves the investment, beginning immediately, of upwards of \$500 million.

The growth of this sector will be financed and implemented by four "partners": the existing vehicle assembly firms, foreign investors, Venezuelan entrepreneurs, and the Venezuelan Government. At least \$200 million of total investment will be in machinery and equipment purchases. The lack of a local metalworking machine industry ensures that virtually all of this equipment will have to be imported.

NATURE OF THE SECTOR

The uniqueness of Venezuela today is hardly more apparent than in its automotive industry. While vehicle production was in a sharp decline worldwide in 1974, Venezuelan passenger car sales grew 20% over the previous year, with no sign of a slackening of demand. New car sales in 1975 are expected to grow a further 15% (to 90,000 units). Also, one does not see a major shift away from the traditional large U.S. style vehicle toward smaller, more economical cars. Models of all sizes and variations are being sold almost as soon as they roll off the assembly lines. Those who are not satisfied with the 90 or so different passenger car models assembled locally are importing finished vehicles at duty rates of 350% of cost, insurance and freight (c.i.f.) value.

Low cost, plentiful gasoline is, of course, a contributing factor to this auto boom. But more important is the impetus being given to the development of the automotive industry by the Venezuelan

Government, both directly through incentive programs and indirectly through expansion of the highway system (without yet providing alternative means of transport).

The Venezuelan vehicle industry traditionally has been a foreign-owned assembly operation. A glance at the list of terminal producers (assembly firms) in Table 1 shows that most of the major firms in the industry worldwide are represented. The terminals are highly vertical, i.e., they produce no components or parts in their plants. The Venezuelan Government is playing an increasingly greater role in the industry, primarily to encourage the production of more "Venezuelan" models (local content of all vehicles now averages 35%). Also, as part of the implementation of the Andean Common Market (ANCOM) foreign investment policy, the Government is moving to transfer ownership of the terminals to nationals or to mixed foreign/local enterprises.

The cumulative total of vehicles assembled in Venezuela reached 1 million units in the final quarter of 1974. Vehicle production in 1975 is estimated to be 90,000 passenger cars and 43,000 trucks.

The terminals and the local parts suppliers are situated near the important auto markets. As to the geography of the market, Caracas accounts for approximately 46% of total passenger car sales of all makes and 30% of the total consumption of other types of vehicles. Valencia and Maracaibo account for about 8% each of the passenger car market.

PASSENGER CAR TRENDS

Industry estimates put growth in market demand for passenger cars over the next 5 years (1975-1979) at about 10.2% per year. This appears conservative, given the 20% growth in sales in 1974 over 1973. Sales in 1974 amounted to 80,000 units, and with 10.2% annual growth this total will reach 130,000 units in 1979 and 140,000 by 1980.

Table 1.—Automotive vehicle production by assembly firm and category of vehicle—1974

	Automobiles and microbuses, etc.		Total		COMMERCIAL VEHICLES							
	units	per-cent	units	per-cent	"Rusticos"		Up to 4,000 Kg.		Over 4,000 Kg.		Bus & chassis	
					units	per-cent	units	per-cent	units	per-cent	units	per-cent
C.A. Tocars (Toyota)	—	—	4,388	11.22	4,388	40.88	—	—	—	—	—	—
Consortio Inversionista Fabril, C.A. (Mercedes Benz)	1,690	2.14	299	.76	—	—	—	—	143	11.03	156	7.84
Constructora Venezolana de Vehiculos, C.A. (Renault-American Motors) ..	7,569	9.58	—	—	—	—	—	—	—	—	—	—
Chrysler de Venezuela, S.A.	20,519	25.98	5,452	13.92	—	—	4,766	18.96	—	—	686	34.45
Ensambladora Carabobo, C.A. (Nissan Patrol)	—	—	2,270	5.80	2,270	21.15	—	—	—	—	—	—
Ensamblaje de Carrocerias Valencia, S.R.L.	—	—	183	.47	—	—	—	—	—	—	183	9.19
Fabrica Industrial Automotores Venezuela, C.A. (Fiat)	2,302	2.91	2,302	.70	—	—	—	—	268	20.66	8	.40
Ford Motor de Venezuela, S.A.	22,581	28.59	12,248	31.28	—	—	11,648	46.33	—	—	600	30.14
General Motors de Venezuela, S.A. ...	15,996	20.25	7,987	20.39	—	—	7,723	30.72	—	—	164	13.25
Industria Venezolana de Maquinarias, C.A. (International Harvester)	—	—	927	2.37	—	—	546	2.17	381	29.37	—	—
Mack de Venezuela, S.A. (Range Rover)	—	—	1,196	3.05	668	6.22	—	—	505	38.94	23	1.16
Rootes Motors de Venezuela, C.A. (Hillman)	2,599	3.29	—	—	—	—	—	—	—	—	—	—
Talleres Gago, C.A.	—	—	71	.18	—	—	—	—	—	—	71	3.57
Volkswagen Interamericana, C.A. ...	5,734	7.26	456	1.16	—	—	456	1.81	—	—	—	—
Willys de Venezuela, S.A.	—	—	3,409	8.70	3,409	31.75	—	—	—	—	—	—
Total	78,990	100	39,162	100	10,735	100	25,139	100	1,297	100	1,991	100

* Owned by Chrysler.

Source: "Estadísticas de Produccion de Vehiculos—1974." (See Bibliography).

The average annual growth in the number of passenger cars in circulation over the next few years is expected to exceed previous growth rates, going from the approximately 7% experienced in 1970–1974 to a projected 10% a year growth from now through 1979. The number of passenger vehicles in circulation totalled an estimated 633,000 in 1975, and is projected to reach 931,000 by 1979.

One reason for this growth rate increase is that the rate of scrappage of vehicles appears to be declining slightly now. This follows a period during which most older cars were taken off the road, partly due to stricter government inspection standards and partly to increased purchasing power that permitted owners to trade up to new cars. While adequate statistics are not available in this area, the age distribution of vehicles in Venezuela is relatively young. Indeed, one has to look hard to find a jalopy on the streets of Caracas.

As far as the model types are concerned, industry sources expect demand trends to be relatively stable in the future, with some increase in the preference for small cars at the expense of a slight diminution in demand for larger, family-size cars. The projections are based on the assumption that there will continue to be a reasonable range of car models on the market and that price differentials will remain roughly the same.

TRUCK PRODUCTION TRENDS

The demand for trucks in Venezuela has been very strong in recent years. Growth in sales of

trucks has paralleled that of passenger cars, but capacity restraints in the industry have kept truck sales from reaching their true potential. These restraints became serious enough that in April 1975 the Venezuelan Government greatly reduced import duties on trucks for 90 days, subject to prior authorization. Since 1965, new truck sales have more than doubled to the 1974 figure of 37,800 units. Light trucks, which include vans, micro-buses and "rusticos" (Jeep, Nissan Patrol, and Land Rover), have predominated in the market and should continue to account for about two-thirds of total sales.

While the extra heavy vehicle market is relatively small compared to the market for lighter trucks, it is expected to make great strides in volume and share of market in coming years. Production in 1975 is estimated at 1,900 units, up considerably from the 1,100 units made in 1971; and it is expected to reach at least 3,400 units by 1980. The market consists mainly of units in the 27,500 to 81,000-pound Gross Vehicle Weight (GVW) class. Only four manufacturers are producing vehicles that large: Fiat and Mercedes Benz are strong at the lower end of the weight spectrum, while Mack and International Harvester offer a wide variety of units in different weights and configurations.

Extra-heavy vehicles play a critical role in industrial development of the sort Venezuela is expected to undergo over the next few years in such areas as mining, logging, and road building. For example, they are essential in the transport of minerals from the mine to processing plants. And as industries are forced to decentralize outside the Caracas area, these trucks will be needed to help expand the road

network and to transport goods and raw materials into newly industrialized areas.

The national content presently incorporated into extra heavy vehicles is estimated to be only about 7.5%. An increase in this percentage is probable, but it is unlikely that it will exceed 20% by 1980, even with a considerable expansion of the supplier base. This means, of course, that there will continue to be a good market in Venezuela for a wide range of imported components and accessories for extra-heavy vehicles.

AUTOMOTIVE SUPPLIER INDUSTRY

There are about 150 companies exclusively manufacturing auto parts in Venezuela. These companies, along with another 50 firms that supply other industries as well, currently make over 500 lines of parts and accessories for the original equipment and the replacement parts market. Included are a wide range of items from electrical equipment such as coils and condensers to air pumps, radiators, and filters. In fact, the auto industry is the largest local consumer of steel, copper, zinc, plastics, paint, and safety glass. Some of the more important parts now being manufactured in Venezuela are not yet available for all vehicles. Rear axles, for example, are made for passenger cars and light trucks, but not for heavy trucks; and front driving axles are made for four-wheel-drive light trucks but not for two-wheel-drive trucks. However, a project for the manufacture of heavy front and rear axles, axles for trailers, and brakes has been approved by the Ministry of Development. It is to be implemented by Rockwell International in association with local groups.

Investment in the automotive products industry has risen steadily from a total of Bs. 40 million in 1961 to about Bs. 300 million in 1972 (Bs. 4.28=

U.S. \$1.00). The total value of production rose from Bs. 150 million in 1963 to a projected Bs. 1,200 million in 1975. Employment in the industry grew from 3,768 in 1963 to 13,224 in 1974.

Although representing about 10% of the total number of major suppliers, the top 10 firms (see table 2) account for close to 50% of total sales. Each of them receives technical assistance from a foreign parent firm or a foreign licensor.

It was only from 1963 that motor vehicle assemblers were required to incorporate domestically manufactured parts into both passenger cars and commercial vehicles. A certain percentage of the vehicle's net weight had to be of local origin. With the exception of certain obligatory items, the terminal producer was given the choice of what products to source in Venezuela. These items tended to be heavy, labor intensive, and of low technology.

Since then, the system of measuring national content has become more sophisticated, involving a complicated formula of weight and value considerations. The degree of required local content has steadily increased. Today, the estimated national content percentage of typical locally assembled vehicles (including options) is as follows:

Typical U.S. standard car	40%
Typical U.S. compact car	37%
Typical U.S. light truck	32%
Typical U.S. heavy truck	32%

The average for all passenger cars, including European models, is 38%; for all commercial vehicles, 32%. As the percentages rise, so does the technological level and the capital necessary to produce these newer, more complex parts and components.

Parts that will continue to be imported until major new investments are made for their local production are listed in Table 3.

Table 2.—Top 10 automotive suppliers in Venezuela and their 1974 automotive sales to terminal producers (in millions of U.S. dollars)

Supplier	Location	Product	Technical assistance	Sales
Danaven	Valencia	Axles, driveshafts	Dana	20.9
Sidaven	Valencia	Stampings	Dana	15.0
Metalcar	Valencia	Coil & leaf springs	Rockwell	10.1
GOA	Valencia	Axles	Chrysler	9.8
Rudeveca	Valencia	Wheels, drums	Kelsey	8.7
FAACA	Cua	Air conditioners	Philco	6.6
Goodyear	Valencia	Tires	Goodyear	5.8
OCI-Metalmecanica	Caracas	Stampings	Kaiser	5.5
Corp. Miranda	Palma Sola	Rotors, drums	VW	4.7
Firestone	Valencia	Tires	Firestone	4.7
Total				91.8

Source: A Study of Automotive Manufacture in Venezuela (see Bibliography).

Table 3.—Auto parts—Continuing import needs

Instrument cluster	Windlace
Windshield wiper blades and arms	Door handles
Exterior moldings	Door locks
Lamps	Wheel covers
Lock sets	Grilles
Steering gear box, linkage and arms	Steering column
Front suspension	Power steering pump, valve, cylinder and hoses
Front stabilizer (truck)	Suspension joints
Front I beam (truck)	Brake hoses
Master cylinder	Fuel cylinder
Fuel hose	Transmission
Clutch assembly	Transmission linkage
Engine assembly	Engine castings—
Engine forgings	grey iron & nodular
Block machining	Head machining
Intake manifold machining	Exhaust manifold machining
Crankshaft machining	Connecting rod machining
Camshaft machining	Bearings (engine)
Piston	Valves, intake and exhaust
Piston pin & rings	Tappets (valve)
Valve rocker arm	Oil pump
Valve springs	Front cover
Retainers (valve)	Water pump
Rod (valve push)	Fuel pump
Timing chain	Engine supports
Crankshaft damper	Accelerator linkage
Carburator	Water temperature switch
Oil seals	
Heat regulator valve	
Oil pressure switch	

Source: A Study of Automotive Manufacture in Venezuela (see Bibliography).

VENEZUELAN GOVERNMENT POLICY

The auto industry has become increasingly regulated by the Venezuelan Government. The main thrust of this regulation has been to induce the terminal producers to incorporate an increasingly larger share of indigenous parts and accessories into the locally-assembled car. A corollary to this is the achievement of some standardization of the parts and components used by the industry.

At the end of 1969, the Government imposed price controls on terminal manufacturers for the first time by ordering a roll-back of passenger car prices to 1968 levels. (Truck prices were not affected.) In addition, some important changes were made in the program to increase the national content of the cars:

A more sophisticated system of measuring national content was devised; instead of weight being the only criterion, the value of the part or component was also to be taken into account. Five-year forward planning of national content level increases was instituted.

Exporting became, to a degree, an alternative to increasing national content.

A policy of reducing the number of models on the Venezuelan market was adopted in order to improve the feasibility of expanded local parts production.

Price controls were lifted in July 1971 on all but the least expensive "popular" models. But at the same time, the Government required the terminals to devote a constant 25% of total production to the manufacture of these price controlled, "popular" models. When the model reduction program of the Government was implemented in July 1973, reducing the number of passenger car models to a maximum of four and a minimum of two for each terminal, the terminals eliminated many of their "popular" models. The production of these models was becoming less profitable as a result of the pinch caused by price controls on the one hand and higher costs for both local and imported materials on the other.

For a time in 1974 all passenger car prices were again rolled back and frozen. This condition was eased later in the year with a permitted increase of 5% for those cars considered to be a "basic necessity." All others were released from price control but at the same time were not permitted to exceed 50% of total passenger car production. The terminals maintain that it is still unprofitable for them to sell the more utilitarian models at the regulated prices. Development Minister Casals, on the other hand, has been quoted as saying that the Government will produce popular priced cars if the private companies cannot supply them.

Since auto demand depends on many factors, not the least being the rate of national economic growth many decisions taken by the Venezuelan Government impinge indirectly on the automobile industry. A good example is the Government's transportation

Table 4.—Selected transportation systems indicators, 1960 and 1972

	1960	1972	Per cent Chang
<i>Railroads</i>			
Kilometers of track	465	226	-51
Tons of cargo transported (thousands)	159	236	49
<i>Vehicles</i>			
Trucks and buses in circulation..	125,100	210,000	68
Cars in circulation	312,000	496,900	59
Total vehicles in circulation.	437,100	706,900	62
<i>Highways</i>			
Kilometers of paved roads	8,312	19,170	130
Kilometers of unpaved roads . . .	18,131	25,108	38
<i>Gasoline</i>			
Annual consumption (million liters)	2,442	4,675	91

Source: A Study of Automotive Manufacturers in Venezuela (see Bibliography).

policy, particularly, that affecting the growth of the highway network and the level of development by the Government of alternate means of transportation. As can be seen in Table 4, the actual pattern of infrastructure growth over the last several years has encouraged the expansion of the automobile industry.

THE SECOND STAGE DEVELOPMENT PLAN

The Venezuelan Government's Second Stage Development of the automobile industry, for the years 1975 through 1979, centers on the intention to reach the goal of over 70% local content in all vehicles produced in the country by 1980. Also required is a further sharp reduction in the number of vehicle models.

This is an ambitious as well as a controversial goal. It has taken Venezuelan industry 12 years to reach an average national content level of 35%. Even at that point there are suppliers that are working at capacity to meet the present demand. To double the national content level in 5 years is a giant, and according to some industry sources, a risky step. For what is required is not just a gradual expansion of suppliers' capacities at rates experienced over the last few years, but also major investments in new, high technology industries with consequent heavy demand on local private capital, raw and intermediate material supplies, and—highly skilled workers.

Most of the 35% to 40% increase in local content mandated by the Government is to come from the manufacture of the power train in Venezuela. The power train in this context means three major vehicle components—the engine, transmission and axle—and certain subcomponents of these three items. The Government has indicated that a full 80% of the value of the total engine, transmission, and axle must be manufactured or purchased in Venezuela. The system for measuring the national content of the major components and subcomponents of the power train have not yet been clearly defined, however.

The model reduction required to standardize sufficiently parts production under the Second Stage Plan is as follows: of a total 10 or 12 vehicle models, production of passenger cars will likely be limited to five basic models; there will be about five models of light commercial vehicles (including pick-up trucks) and one four-wheel drive model. Some modification of the carriage body will be permitted to enhance product differentiation and thus help mollify consumers faced with a drastic reduction in the choice of cars on the market.

The investment required in new supplier and/or auxiliary industries under the Second Stage Plan is large, both in terms of size (about \$500 million) and scope. Foreign capital will not be excluded, but it will be limited to a minority participation in any given project. According to unofficial reports, there are to be at least seven priority projects which will be promoted by Venezuelan Government financial and development agencies:

A foundry with an annual capacity of 60,000 tons

A forging plant with an annual capacity of 15,000 tons

Two plants with a combined capacity of 144,000 units per year to manufacture six and eight cylinder gasoline engines

A plant to produce 46,000 four-cylinder gasoline engines per year

A plant to manufacture diesel engines with a capacity of 4,000 units per year

A plant to manufacture hydraulic automobile transmissions, with 96,000 units per year capacity

A plant to manufacture synchronous automobile transmissions, with 100,000- units per year capacity.

No additional vehicle assembly (terminal) plants will be allowed under the plan.

It is clear that if the goals of the Second Stage Development Plan are to be realized these investments will have to be made as soon as possible, because these highly technical, capital intensive projects have long lead times. The highly specialized machinery and equipment, for example, can take as long as 2½ years to build and deliver after the receipt of a firm order.

The sheer magnitude of the capitalization of these ventures poses special problems. The Government has said that the capital should be primarily Venezuelan, i.e., local or mixed local and foreign. But for all of these investments to proceed at the same time would put a great strain on local private capital availabilities. This is especially true given the enormous investments, again with local capital, that are to be made in other industrial sectors over the next 5 years. To cope with this, the automotive industry association (CIVA) has underscored the need for a coordinating group in the executive branch of the Government to oversee the investments. Active financial contributions to, or the official underwriting of, these investments by the Government was also termed "necessary."

The President of Chrysler de Venezuela, Mr. Michael Katzin, has been quoted as saying that since the Venezuelan automobile industry's output volume is at roughly the same stage of development

as were those of Mexico, Brazil, and Argentina when those countries began large-scale component manufacturing programs, the increased costs involved should not be unexpectedly great in the case of Venezuela.

However, Katzin believes that the best results would be achieved if the new program were to begin with the manufacture of axles, which are the most interchangeable of basic parts. Some axles are already being made in Venezuela. Next would follow production of manual transmissions, which are less easily interchanged. The next higher degree of complexity would be the engine, which has not been at all interchangeable among manufacturers. Finally, the most difficult to achieve in Venezuela would be the body stampings, which require such high investments in tooling that it is generally considered unfeasible at this time.

The problem of the body stampings raises other important questions. If made locally they would make up much of the final 30% of full national content. If more of the technically advanced specialized and least interchangeable parts are made locally, parts producers will be much more dependent on sales to a particular terminal producer. Conversely, the terminal will be increasingly dependent on particular local suppliers. This increases the likelihood that parts producers and the terminals will enter into agreements or even partnerships.

The manufacture of many of these parts will involve the patented technology of the foreign-based parent automobile producer. He would want to protect this know-how and assure adequate compensation for it at a time when he is being required by law to relinquish all but 20% of the ownership of the local assembly operation. This also would bring into play Venezuela's new and, at least on the surface, highly restrictive legislation on technology transfer.

Another factor is the considerably higher cost of vehicles produced with a higher national content. Industry sources state that raw material costs are

a much more important factor in the price of a finished vehicle than labor costs. Table 5 shows the relative cost of some basic raw materials in Venezuela and other auto producing countries. The higher prices for these goods in Venezuela will push up the price of cars locally and is likely to have a dampening effect on the demand for vehicles. It will also affect the competitiveness of Venezuela's automotive exports. These upward price pressures could be compensated for by direct government subsidies, but the Government's attitude toward such subsidies is unclear at this point.

EXPORTATION PROGRAMS

Under current export programs a terminal vehicle producer can earn up to 40% of its national content requirements by exporting companies of an equivalent value. This has proven attractive to the terminals, because it is easier to export a simple part than to make an incremental increase in the national content incorporated in the vehicles it produces. Since weight is a major consideration in calculating local content, many of the parts currently exported are heavy (e.g., truck side members, leaf springs, bumper jacks, etc.). This type of export incentive can be considered to be quite effective since, without it, the products are not generally price competitive on the world market and probably would not be otherwise exported. Other exports include chassis rims, safety glass, screws, and some electric parts. These exports have gone primarily to the United States, Argentina, and Mexico.

No precise figures exist on current levels of exportation of automobile parts and components. But industry sources estimate that the value of these exports might now be in the \$15 to \$20 million range, assuming that the terminals are taking advantage of the full 40% export/national content trade-offs.

Consistent with the national content increases required under the Second Stage Development Plan

Table 5.—Key material costs in selected countries
(in U.S. dollars per pound—materials produced nationally)

Material	COUNTRY						
	Argentina	Brazil	Germany	Mexico	United States	Venezuela	Venezuel % of U.S
Aluminum—primary	.77	.51	.46	.46	.39	.43	110
Copper—wirebar	1.02*	.68	.58	.63	.65	2.00*	308
Cotton—1½ mid	1.40	.15	.50*	.40	.40	.40	100
Nickel—cathode	4.51*	3.35*	2.09	2.91*	2.01*	3.70*	184
PVC resin	1.04	.43	.42	.42	.24	.65	271
Rubber—synthetic	.46	.45	.37	.58	.35	.53	151
Steel—cold roll sheet	.46	.18	.17	.15	.14	.23*	164
Steel—hot roll bar—carb	.59	.19	.18	.24	.19	.30*	158
Zinc	1.30*	.52*	.38	.44	.40	.74	185

* Imported.
Source: Ibid.

is a decrease in the value of components imported per average vehicle from a current estimated figure of \$2,800 to about \$1,200 per unit in 1980. In total figures, there would be a decline from about \$368 million to \$255 million, even though vehicle production is expected to increase 60% over the same period of time.

Export goals of the Second Stage Development Plan have not yet been set. If the Venezuelan Government hopes to have auto exports roughly equal auto imports by 1980, this would mean a manifold increase in the value of exports, the reduced import component notwithstanding. This would imply the need for greater export incentives to terminal producers and to supplier industries to keep export prices low enough to compete on the world market.

THE EFFECT OF THE ANDEAN COMMON MARKET

In addition to the industrial policy of the Venezuelan Government, an important, if longer term, factor in the total automotive picture is the Andean Common Market (ANCOM). Sectoral group discussions have been in progress to parcel out various facets of vehicle and components production among ANCOM member countries in an effort to create a regional industry. Also planned is the eventual elimination of national duties to permit the free circulation of these products within the region. But the delays and uncertainties involved in agreeing on a regional policy have led the Venezuelan industry to be highly cautious, at least for the time being, regarding ANCOM possibilities. In the background, of course, is the fact that Venezuelan automobile production currently exceeds total auto production in all other Andean Group countries. Even so, industry spokesmen insist that they expect to participate in the Andean Pact so long as their major interests are not jeopardized. They are primarily interested in the development and growth of the industry, with or without ANCOM benefits. For this reason, terminals and local suppliers have been pressing the Venezuelan Government for clearer, more detailed policy directives, both regional and national, so that they may proceed with investment decisions.

It should be stressed that this nationalism does not affect normal, day-to-day business decisions. Venezuelan Government officials and businessmen in particular, when making decisions on the purchase of equipment, value performance, durability, ease of maintenance, price and delivery time regardless of national origin. As U.S. machinery and equipment rate high on each of these points, they are often favored by Venezuelans.

NEW MANUFACTURING FACILITIES NEEDED

Table 6 indicates industry estimates of the investments to build four plants essential to reaching an 80% national content for the power train. These estimates are based on lower volume, non-automated production methods using general purpose machinery and equipment that are considered best suited to the Venezuelan situation. This method permits greater flexibility in producing engine or transmission variations within a "family design" (various components sharing key dimensional specifications and key subcomponents).

The engine plant can serve as an illustration of how the estimated investment cost would break down. Of the \$170 million, 5% would go for land and improvements, 23% for building and construction, 40% for machinery and equipment, 17% for special tooling and 14% for launching and pre-production costs. Table 7 shows the types and quantity of equipment needed for a general purpose engine machining/assembly plant.

Of the total of \$103 million needed for the manual transmission plant, \$43 million would be used for the purchase of about 560 machine tools, virtually all from abroad. This level of investment takes into account the normal tendency of transmission manufacture to be more integrated than engine manufacture; that is, relatively more parts are produced within the plant rather than being purchased from outside suppliers.

If an automatic transmission machining and assembly plant is to be constructed, it would require a total investment of about \$130 million. This would provide for the manufacture of one transmission "family" for use in passenger cars and pick-up

Table 6.—Estimated investment requirements for four planned component plants
(in millions of U.S. dollars)

Type of plant	Products produced	Annual capacity	Estimated investment cost	Estimated lead time necessary
Engine plant	Single-engine family	70,000 units	170 million	36 months
Manual transmission plant	Three families for car & truck	85,000 units	103 million	30-36 months
Foundry plant	Grey, nodular & alloy castings	115,200 tons	135 million	42 months
Forge plant	Variety of forged parts	3,800 tons	36 million	41 months

Source: A Study of Automotive Manufacture in Venezuela.

Table 7.—Typical machinery and equipment requirements for a general purpose engine machining/assembly plant and estimated lead times (including suppliers)

<i>Type of machine</i>	<i>Number of machines</i>	<i>Typical supplier firm</i>	<i>Estimated delivery lead time (months) to U.S. port after order</i>
Special milling machines	30	Cross, Lamb, La Salle	14
Special shuttle-type drilling and/or tapping machines	24	Cross, Lamb, La Salle	14
Special dial type drilling and/or tapping machines	6	Cross, Lamb, La Salle	13
Special boring machines	10	Cross, Lamb, La Salle	14
Special type lathes	5	Wickes, Leblond	15
Standard production type lathes	13	Leblond, Gisholt, Motch & Merryweather	13
Hones	4	Micromatic	13
Turret type drill	24	Burgmaster	13
Standard type drill	10	Cleerman, Avey	13
Balancers	4	Gisholt	13
Lapper	4	Gisholt, Impco	15
Broach	2	Detroit	14
Grinders	22	Cincinnati, Landis, Norton, Madison, Beasley	13
Washers	10	Centri-Spray	13

Source: A Study of Automotive Manufacturers in Venezuela (see Bibliography).

trucks. Such a plant, with an annual capacity of 100,000 units, would produce about 40% of the 750 to 800 parts that go into an automatic transmission (in contrast to the much higher percentage of only 200 parts in a manual transmission). The plant would need about 450 machine tools, again virtually all to be imported, and would require between 30 and 36 months to develop full production status.

The new detailed Resolution implementing the Second Stage Development Plan called for a *concurso*, or call for bids, before the end of 1975 for each of the projects discussed above. There will be open bidding for all except the engine plants, in which case bids will be accepted only from those companies now assembling in Venezuela.

The results of this bidding will have a profound effect on who produces what kind of vehicle in Venezuela in the future. If Ford wins the competition to build the eight-cylinder engine, for example, Chrysler and General Motors are likely to drop out of the large car market because of the great difficulty involved in using Ford's V-8 engine in their cars. The same would be true for Volkswagen should Chrysler-Hillman win the four-cylinder contest, etc. The terminals that lose out in the competition for engine assembly will be encouraged to use their facilities to manufacture major components.

THE MARKET FOR IMPORTED MACHINERY

The greatest growth in the Venezuelan market for imported machinery and equipment for the automotive sector will come from the new plants

and new industries needed to support the jump from 35% to 70% in the national content of locally produced cars. There is likely to be little in the way of increased demand for equipment to expand existing metal parts fabrication facilities. The local metalworking industry as a whole is now working one shift at an estimated 60% of capacity.

One reason for this excess capacity is that the equipment bought in the past by the industry has been of a higher volume than actually needed for the limited market. As it is, metalworking in Venezuela is done in "job shops" that produce a variety of products, many custom ordered by other than the automotive industry.

For this reason, the local metalworking industry puts a high value on the versatility of the equipment it imports. While the Venezuelan Government has not yet specified the general type of equipment that is to be used in the proposed new plants, the preference of the local industry is for machinery that can be easily adapted to perform a variety of jobs or to produce many varieties of the same type of part. Not in great demand are the numerically controlled, state-of-the-art type of equipment that produce in high volume, far in excess of the ability of the local market to absorb.

MARKETING TO THE SECTOR

The fact that actual groundbreaking on new investment projects is not likely to begin before mid-1976 can be looked upon as an advantage for U.S. suppliers of equipment and know-how. The Venezuelan firms in the sector are keenly conscious of the fact that the other shoe will drop very soon in

the form of the final details of the Government's automotive industry development plan. They know they will have to be prepared to implement their investment programs to produce the higher technology components needed to double the national content of locally-made vehicles by 1980. In the meantime, local entrepreneurs are eager to discuss possible business arrangements with foreign firms that can provide the hardware and technology they need. This makes it a particularly opportune moment for U.S. new-to-market firms to establish local contacts with those making the basic investment decisions related to meeting their 1980 goals.

Business arrangements that will be concluded will vary from the supply of equipment or know-how to a joint-venture investment. The mind of the Venezuelan entrepreneur is open. And those U.S. firms that introduce their technology at this early stage can look forward to years of follow-on business.

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8 Transportation

Ambitious government-financed programs for construction of major shipyards, amplification of the nation's ports, expansion of railroads, construction of a Caracas subway system, and improvement of the air transport system are expected to present considerable opportunities to U.S. suppliers of transport industry equipment. Total Venezuelan expenditures on transportation are expected to exceed \$2 billion over the next 5 years. In addition to developments of interest to American suppliers of equipment and services for maritime shipping, railroads, urban mass transit, and air transportation, U.S. firms stand to benefit from expansion of the nation's road system. Roads are the principal means of transportation. They handle over 90% of all passenger and freight. The total length of thruways, divided highways, highways, and roads combined is

over 45,000 kilometers (1 km=.6214 mi), about 45% of which are paved. Though the system has expanded slowly in recent years, 28,000 km of farm roads alone are scheduled to be built as part of the current 5-year National Development Plan (1975-79).

MARITIME SHIPPING

Venezuela's Tanker Fleet

The Venezuelan Government is determined to develop a national tanker fleet (see table 1 for current status) with the capacity to transport at least half or 41 million metric tons (1 MT=2,204 lb) of the country's projected petroleum exports. Government ships presently handle 10% of this cargo.

Table 1.—Tankers under Venezuelan flag, 1975

	<i>Dead weight ton</i>	<i>Draft (fleet)</i>	<i>Speed (knots)</i>	<i>Shaft horse-power</i>	<i>Propulsion</i>	<i>Year built</i>
Corporacion Venezolana del Petroleo						
Independencia I	29,700	32.80	15.6	10,000	Diesel oil	1973
Independencia II	20,700	32.80	15.6	10,000	Diesel oil	1973
Subtotal	50,400					
Creole Petroleum Corp. (EXXON)						
Esso Amuay	37,200	37.25	15.0	12,500	Turbine	1960
Esso Caripito	37,200	37.25	15.0	12,500	Turbine	1960
Esso Caracas	40,925	37.18	15.0	12,500	Turbine	1959
Esso Maracaibo	40,925	37.18	15.0	12,500	Turbine	1959
Esso La Guaira	10,905	22.37	12.0	4,000	Diesel oil	1954
Subtotal	167,155					
Shell de Venezuela						
Shell Mara	45,057	38.21	16.0	13,750	Turbine	1958
Shell Aramare	35,070	35.92	14.5	11,000	Turbine	1960
Shell Naiguata	34,904	35.92	14.5	11,000	Turbine	1960
Shell Charaima	15,100	27.27	12.5	5,500	Diesel oil	1954
Shell Caricuao	14,671	27.27	12.5	5,500	Diesel oil	1954
Subtotal	144,802					
Navemar C.A.						
Navemar	54,307	40.48	16.0	16,500	Turbine	1961
Total	416,664					

Source: Direccion de Maritima Mercante, Ministerio de Comunicaciones.

The Office for the Development of the Petroleum Fleet (commonly known simply as La Flota Petrolera) an agency of the Ministry of Mines and Hydrocarbons, is responsible for study and coordination of Venezuela's tanker fleet development. The Flota Petrolera is expected to contract for the acquisition of new vessels. La Flota Petrolera will also assume control of the present fleet and take steps to modernize and expand the coastal tug and petroleum barge fleet.

Government plans call for the construction or acquisition of about 22 additional vessels, built to specifications developed by the New York-based firm of J. J. McMullen. During the next 5 years, the Flota Petrolera plans to acquire the first contingent of vessels, which will likely be four 60,000 and three 80,000 deadweight ton (dwt) vessels drafting 38-40 feet and equipped with diesel engines of sufficient size to propel the vessels at 16 knots. These should cost \$200 million to \$250 million, which would be financed by Venezuela's Investment Fund (FIV).

The General Cargo Fleet

CAVN (C.A. Venezolana de Navegacion-Venezuelan Navigation Company) is an autonomous agency of the Ministry of Communications which operates general cargo ships. As of November 1974, CAVN had 16 vessels with 128,408 dwt combined and three iron ore carriers with 175,465 dwt combined. Freight volume patterns for the years 1973 and 1974 are shown in table 2. CAVN transported approximately 1.5 million tons of general cargo and 5 million tons of iron ore in 1975. General cargo for 1978 is projected at 1.9 million tons. Total CAVN operating income for the year ending November 20, 1974 was just over \$100 million, on which net profit before taxes was expected to reach \$140 million.

CAVN began transporting ore from Venezuela's newly-nationalized iron ore industry aboard the first of its three leased vessels in February 1974. Additional ore carriers will be leased until traffic volume develops sufficient to justify purchasing additional

Table 2.—Compania Anonima Venezolana de Navegacion: Tonnage moved of general and bulk cargo (excluding petroleum) to and from Venezuela and between foreign ports, 1973-74

	Import	Venezuela			Between foreign ports	Total
		Export	Coastal	Total		
GENERAL CARGO 1973						
<i>Europe</i>						
Mediterranean Service	19,685	310	—	19,995	17,002	36,997
Trident Service J-Venture	76,530	4,343	—	80,873	54,977	135,850
Total	96,215	4,653	—	100,868	71,979	172,847
<i>United States</i>						
Northeast and Southeast Services..	217,355	8,725	—	226,080	3,970	230,050
South Service	167,314	10,222	—	177,536	—	177,536
Total	384,669	18,974	—	403,616	3,970	407,586
<i>Far East</i>						
Japan/Caribbean Service	78,010	—	—	78,010	24,801	102,811
<i>Venezuela</i>						
Coastal Service	—	8,130	138,846	146,976	—	146,976
Total General Cargo 1973	558,894	31,730	138,846	729,470	100,750	830,220
GENERAL CARGO 1974						
Mediterranean Service	26,387	1,255	—	27,642	14,865	42,507
Trident Service J-Venture	109,497	1,812	—	111,309	61,535	172,844
Total	135,884	3,067	—	138,951	76,400	215,351
<i>United States</i>						
Northeast and Southeast Services..	287,482	12,120	—	299,602	314	299,916
South Service	219,795	12,167	—	231,962	—	231,962
Total	507,277	24,287	—	531,564	314	531,878
<i>Far East</i>						
Japan/Caribbean Service	191,506	—	—	191,506	37,836	229,342
Japan/Pacific Service	—	—	—	—	60,182	60,182
Total	191,506	—	—	191,506	98,018	289,524
<i>Venezuela</i>						
Coastal Service	—	1,044	111,935	112,979	—	112,979
Total General Cargo 1974	834,667	28,398	111,935	975,000	174,732	1,149,732
BULK CARGO (Iron ore)						
Grand Total 1974	834,667	1,468,422	111,935	2,415,024	281,127	2,696,151

Source: Compania Anonima Venezolana de Navegacion.

vessels. These vessels would be designed to maximize backhaul capabilities.

Table 3 lists the 10 vessels to be built under Phase I of the CAVN's Renewal and Expansion Program. The Phase I vessels are custom—rather than series—built and incorporate special features to accommodate the characteristics of present and projected CAVN cargos. A further 14 vessels may

Table 3.—General cargo ships under construction

Wartsila-Turku Shipyard, Finland

4 Vessels

Hull numbers: 1238/1239/1240/1241

Dead weight: 14,580 MT

Capacity: 727,000 cubic feet

Delivery dates: December 1976, June 1977,
November 1977 and May 1978

Characteristics:

Length: 159.26 meters

Beam: 22 meters

Hold Depth: 12.60 meters

Draft: 9.83 meters

Principal engine: Sulzer 6 RND 76—12,000 HP

Speed: 18.2 knots

Split Shipyard, Yugoslavia

2 Vessels

Hull numbers: 280/281

Dead weight: 13,000 tons

Capacity: 622,000 cubic feet

Delivery dates: August 1977, November 1977

Characteristics:

Length: 160 meters

Beam: 21.80 meters

Hold Depth: 12.5 meters

Draft: 9.32 meters

Principal engine: M.A.N. KSZ78/155A—13.870 HP

Speed: 19.4 knots

Mitsubishi-Kobe Shipyard, Japan

4 Vessels

Hull numbers: 1075/1076/1077/1078

Dead weight: 17,000 tons

Capacity: 829,500 cubic feet

Delivery dates: January 1977, April 1977,
June 1977 and August 1977

Characteristics:

Length: 158.8 meters

Beam: 22.86 meters

Hold Depth: 13.50 meters

Draft: 10 meters

Principal engine: Sulzer 6 RDN 76—12,000 HP

Speed: 16.4 knots

Source: Compania Anonima Venezolana de Navagacion.

be purchased through the program. Eighty percent of the total \$234 million cost of Phase I was financed by a direct loan from the FIV (Fondo de Inversiones de Venezuela—Venezuelan Investment Fund) and the remainder through the purchase of CAVN stock by the FIV.

Port Development

Congestion in Venezuela's ports has reached crisis proportions. During the month of July 1975, for example, 19 vessels with a total of 55,000 MT of

Table 4.—Merchant fleet registered under Venezuelan Flag by type of vessel, 1974¹

Type of vessel	No. of vessels	Registered gross tonnage
Freighters	24	128,201
Cement carriers	1	3,716
Tankers	15	298,250
Transfer vessels	9	26,175
Dredges	3	35,831
Total	52	492,173

¹ Listing only includes vessels with a registered gross tonnage in excess of 1,000 metric tons.

Source: Direccion de Marina Maritime, Ministeria de Comunicaciones.

Table 5.—Merchant fleet registered under Venezuelan Flag, by owner, 1974¹

Owner	No. of vessels	Registered gross tonnage
C.A. Venezolana de Navagacion	16	106,170
Compania Shell de Venezuela	5	98,811
Compania Creole Petroleum Corporation ..	4	104,842
Compania Petroleo Largo	2	17,381
C.A. Naviera Nucva Esparta	1	2,504
Instituto Nacional de Canalizaciones	2	17,035
Compania Naveira Transporte y Turismo ..	2	3,014
Transporte Fluvial Cacique	1	1,234
Ship Repairs and Service C.A.	1	1,055
Lines Manaure C.A.	1	3,000
Flotantes S.A.	1	3,840
C.A. Venezolana de Cementos	1	3,716
Transporte Industrial C.A.	1	3,499
Compania Maritime Aragua	1	3,951
Navemar C.A.	1	33,519
Inversiones Turfstaticas Margaritefias C.A.	1	3,144
Consolidada de Ferrys S.A.	2	6,180
Nasib Rassi	1	1,325
Orinoco Mining Company .	1	18,796
Tacarigus Marina C.A. ...	1	3,000
Ferrys de Caribe S.A.	1	4,290
Corporacion Venezolana Petroleo	2	39,746
Inversiones Navieras Imparca C.A.	1	4,723
Caminos y Estructuras C.A.	2	7,498
Total	52	492,273

¹ Listing only includes vessels with a registered gross tonnage in excess of 1,000 metric tons.

Source: Direccion de Marina Maritime, Ministeria de Comunicaciones.

cargo awaited dock space at La Guaira, the chief port serving Caracas. One ship carrying grain sorghum for delivery to a government agency was re-

ported still awaiting entrance to the port after 103 days in the roadstead. Such delays have resulted in carriers assessing the following surcharges (percentages are of the freight charge; all such charges are based on "as-freighted" tons):

<i>Origin/Destination</i>	<i>La Guaira</i>	<i>Puerto Cabello</i>
U.S.—East Coast	\$3.00	\$3.00
U.S.—West Coast	5%	20%
Europe	16.5%	\$8.00

Several factors create Venezuelan port congestion. First, the country is blessed with an abundant supply of petrodollars and is on a buying spree. Freight handled in all Venezuelan ports jumped 28% in 1974, reaching 5.7 MT.

Second, the sudden increase in inbound cargo has exceeded the capacity of the trucking industry. At La Guaira, heavy food and feed grains imports (a more than 50% increase from 1973 to 1974) are backed up because of shortages of appropriate transport vehicles to move them out of the port. To ease the truck transport shortages, import duties on trucks were temporarily reduced in 1975.

Third, port facilities are overtaxed. The Minister of Finance, whose ministry is responsible for port administration, recently stated that as much as \$70 million might have to be spent soon to expand the nation's ports. Port area warehouses are being reorganized and new intermediate storage depots designated. At La Guaira, port operation schedules have been lengthened, both for cargo pickup and ship unloading. Various ideas are being considered to increase available dock space immediately by such means as the use of Japanese-style floating docks. In September 1975, a breakwater expansion was to have been completed at La Guaira which would have allowed the construction of new docks to double La Guaria's annual cargo handling capacity to 2.6 million tons.

During late 1975 and early 1976, the Ministry of Finance's Office of Port Administration was sched-

uled to have contracted for approximately \$6 million of cargo handling equipment, in two stages:

First-stage purchases
—54 lift trucks
—13 "mules"
—8 mobile (rubber-tired) cranes
—11 trailers
Second-stage purchases
—36 lift trucks
—20 "mules"
—90 trailers
—4 boat-to-pier 150 tons-per-hour (tph) suction grain conveyors

Although complete details were not available, it was noted that some lift-truck capacities will be as great as 76,000 lb.

Another factor contributing to port congestion is the limitation on the use of containers in Venezuelan ports. Roll-on, roll-off containers are prohibited, as are those requiring the use of specialized container cranes. Port-to-port (coastal) container traffic is allowed, however, as well as inbound containers of homogeneous merchandise, such as automobile sub-assemblies.

In spite of the current longshoremen's union prohibition of most conventional container movements, a spokesman for the Ministry of Public Works' Ports Division stated that the Ministry's 5-year plan provides for broader container traffic. The plan will cost approximately \$24.3 million and have a target completion date of 1980. It envisions the installation of two container berths at La Guaira and between one and four at Puerto Cabello. In addition, the preliminary plan calls for eight additional general cargo berths at La Guaira, and eight more at Puerto Cabello; La Guaira's silo capacity is to be increased substantially. Grain terminals are foreseen for Maracaibo and Guanta, the harbor at Maracaibo will be dredged, and two new piers built at Guanta. International calls for bidder prequalifications for this program were to be made in early 1976.

Table 6.—Public port cargo movements, 1973-74¹
(in thousands of metric tons)

	1973	Total			General Cargo			Bulk Cargo		
		1974	% Change		1973	1974	% Change	1973	1974	% Change
La Guaira	1,382.2	1,726.3	24.9	1,157.2	1,386.9	19.9	225.0	339.4	50.8	
Maracaibo	445.8	630.1	41.3	212.7	366.6	72.4	233.1	263.6	13.1	
Puerto Cabello	2,495.2	3,118.5	25.0	1,464.0	1,847.0	26.2	1,031.3	1,271.6	23.3	
Guanta	118.3	205.6	73.8	65.4	134.4	105.5	53.0	71.3	34.6	
Puerto Sucre	35.1	32.7	-6.9	14.8	22.5	52.3	20.3	10.1	49.9	
Carupano	10.1	2.1	-78.8	10.1	2.1	-78.8	—	—	—	
Cuidad Bolivar	—	—	—	—	—	—	—	—	—	
Las Piedras	12.8	12.7	—1	12.8	12.7	—1	—	—	—	
El Guamache	—	12.2	—	—	12.2	—	—	—	—	
Total	4,499.5	5,740.3	27.6	2,936.8	3,784.3	28.9	1,562.7	1,956.0	25.2	

¹ 1974 data are provisional.

Source: Direccion de Marina Mercante, Ministerio de Comunicaciones.

The Shipyards Program

The National Institute of Shipyards and Drydocks (Instituto Autonomo de Diques y Astilleros Nacionales) operates Venezuela's principal maritime vessel construction and repair facility at Puerto Cabello. This agency repairs vessels of the Venezuelan navy and merchant fleet, and is also capable of construction of vessels as large as ocean-going tugs. In 1971, the Institute began a three-stage expansion program to increase its capabilities. The first stage consisted of the construction of a 228-meter-long (1 meter=39.37 in.) wharf and two covered shops with a combined area of 16,500 m² (1 m²=10.7 sq ft). These shops are equipped with six 30-ton bridge cranes, and two each of 5- and 10-ton capacity. In addition, the shipyard is equipped with three self-propelled rail-mounted shipyard cranes, a 60-ton crane, two 20-ton cranes, and two hydraulic telescoping cranes, each with a capacity of 14 tons. The second stage of the Institute's expansion program calls for the installation of a 5,000-ton capacity "Synchrolift" elevator of sufficient size to handle ships of up to 10,000 dwt. Installation of the "Synchrolift" started in July 1974 and is scheduled for completion in 1976. The second stage also provides for construction of additional wharves for floating repairs. The Institute's dry-dock facilities will be enlarged to permit repair of ships between 15 000 and 30,000 dwt.

Plans for installation of repair facilities for vessels in excess of 30,000 dwt were approved in 1974, to begin the third stage of the Institute's expansion program. The Institute is to have a drydock with a capacity for vessels up to 100,000 dwt, and two additional wet repair wharves. Construction of the new facilities is to take place during 1976-79.

The CAVINA (Camara Venezolana de la Industria Naval-Venezuelan Naval Industry Chamber) is reportedly seeking assistance from the Venezuelan Industrial Bank and other governmental agencies to finance its members' imports of marine steel, marine engines, refrigeration equipment, marine radios, and sonar systems.

COVINCA Corporacion Venezolana de la Industria Naval, C.A.-Venezuelan Naval Industry Corporation) is an autonomous public holding company which is the financial administrator of Venezuela's shipyards. COVINCA is 99% owned by FIV, which provided COVINCA's initial capitalization of Bs. 40 million.

COVINCA is now in the process of preparing a 5-year plan for shipyard construction. Total investment for the 5-year program is estimated at Bs. 2 billion, or just over \$450 million. An international marketing study was contracted in July 1975. It was expected that a consortium (see short list of pre-qualified consortia in table 7) would submit its site

Table 7.—Firms prequalified for Covinca Shipyards Site Study

Group I	Corporacion Tecnica Naviera Caracas C.A.
	Ocoidesa C.A.
	MKS Proyectos C.A.
	SRS Shipping Research Services A.S.
Group II	Dits S.A.
	Dit-Harris S.A.
	F.C. de Weger International B.V.
Group III	Inelectra
	Novel Ingenieros C.A.
	Parsons, Brinckerhoff, Quade & Douglas
Group IV	Pieds C.A.
	Ishikawajima-Harima Heavy Industries Ltd.
Group V	Proyectos Inmel C.A.
	Sener, Tecnica Industrial Y Naval S.A.
Group VI	Inaval C.A.
	AB Gotaverken
	A&P Appledore

Source: Corporacion Venezolana de la Industria Naval, C.A.

recommendations in early 1976; study by COVINCA and review by the Venezuelan Government might require an additional 6 months before shipyard design contract proposals could be called for.

Preliminary indications are that COVINCA will contract for the construction of a new shipyard at Sucre, a repair facility in Paranagua, a new shipyard in Orinoco, and expansion of the present shipyard in Puerto Cabello. COVINCA foresees these new Venezuelan shipyards being operated by the constructor. A COVINCA source stated that foreign capital participation up to 20% will be encouraged in the shipyards construction. Private Venezuelan capital participation will be allowed up to 29%, and COVINCA will retain 51%. Puerto Cabello, which is expected to build naval and "special purpose" vessels, would be owned completely by COVINCA.

In addition to its plans outlined above, COVINCA also assists in arranging the financing of privately-owned Venezuelan ships purchased abroad and it intends to promote and finance the development of shipbuilding support industries. Spokesmen for the Flota Petrolera and CAVN have suggested that COVINCA-financed shipyards will probably play a major role in the construction of vessels to expand Venezuela's tanker and ore-carrier fleets.

COVINCA may also finance the Government's purchase, perhaps through the Ministry of Agriculture and Livestock, of Venezuela's privately-owned fishing fleet, Flota Pesquera. According to fleet sources government regulations relating to authorized fishing waters and controls of prices and catch have made it difficult for the fishermen to

make a profit. Some 50 firms (the majority of the industry) offered to sell trawlers, processing plants, and other installations to the Government in response to government statements that formation of a public company to absorb some part or all of the private fleet might be a solution to the controversy.

URBAN PUBLIC TRANSPORT

Buses

IDTCA (Inversionistas del Transporte C.A.—Transport Investment Company), is an autonomous entity under the Venezuelan Ministry of Finance. Its subscribed capital is \$37 million. IDTCA is responsible for the acquisition and financing of buses, which are then leased to private firms or the state-owned Municipal Collective Transport Institute. There are reportedly more than 50 private firms in Caracas alone. IDTCA's program for expansion and modernization of the nation's bus fleet has been concentrated in the Miranda State cities of Caracas, Los Teques, Guarenas, La Guaira, and Guatire, Venezuela's most densely populated area.

Beginning in 1974, IDTCA purchased approximately 580 Ikarus buses and 250 Leyland National units. An IDTCA source stated that based on recent tender proposals, orders were placed with Ikarus and British Leyland in 1975 at approximately \$37,000 and \$50,000 c.i.f. respectively. U.S. makes ranged in price between \$61,000 and \$65,500.

Caracas' 2,300-bus fleet is 50% to 60% obsolete. Substantial purchases will continue for the next several years. Besides the two makes mentioned above, others seen in Venezuela include Mercedes-Benz (manufactured in Brazil), REO Superior (with bodies assembled by Talleres Gago in Valencia), Blue Bird, and a few older Chevrolets.

IDTCA is said to be considering entering into partnership with the present bus companies to establish modern and well-equipped maintenance and repair facilities.

The Caracas Metro

When completed in 1983, the Metro subway system will have 324 steel-wheeled cars with the following design characteristics.

- Passenger capacity: 60 seated, 120 standing
- Track gauge: 1.994 meters
- External car width: 3.05 meters
- Rail to roof car height: 3.26 meters
- Floor to roof car height: 2.21 meters
- Undercarriage length—bogie center to bogie center: 15.25 meters
- Overall car length: 21.30 meters
- Maximum speed: 80 km/h
- Acceleration and deceleration:

Maximum: 1.48 m/s(2) (m/s(2) = .3281 ft/5(2))

Normal: 1.35 m/s (2)

Minimum: 1.21 m/s(2)

Maximum of change: 1.35 m/s(2)

Control system: automatic

Empty weight: 33,000 Kg (1 Kg=2.2046 lb)

Weight with 180 passengers: 45,500 Kg

Maximum design weight: 54,400 Kg

Propulsion and braking system: One 100 hp gear drive, DC electric motor per axle, providing dynamic braking. Cars are also to be equipped with auxiliary hydraulic or compressed air friction brakes.

The Metro system calls for seven-car trains to run at 90-second intervals during peak traffic periods.

Car supplier prequalification is to begin in 1976. In addition to the cars, the Metro will require ventilator and ventilator silencing systems, air filters, pumps, rails and mechanized switches, crossovers, escalators, fare collection equipment, power transmission gear, and train control and communications systems, etc. Construction of the first section (roughly one-quarter of the total system) was begun in 1974, and this section is to be in operation by the end of 1979. Recent estimates place the total cost for the first section at approximately \$444 million. The Venezuelan Government has already obligated \$467 million for the Metro, and financing for subsequent construction and supply is to be done through national and international bond issues. Supplier credits will be sought for equipment purchases.

A consortium of Parsons, Brinkerhoff, Tudor and Bechtel has worked on construction, engineering, and equipment specifications. Other civil engineering and construction aspects of the Metro are discussed in Chapter 11 Construction.

RAILROAD

Rail transportation is extremely limited in Venezuela. The principal capability are the 226 kilometers of 1.435-meter track operated by IAAFE (Instituto Autonomo de Administracion de Ferrocarriles del Estado—Autonomous Institute for the Administration of State Railroads) organized under the Venezuelan Ministry of Communications. The most important road is a 170-kilometer stretch between Puerto Cabello and Barquisimeto in central northwestern Venezuela. IAAFE's employment at the end of 1974 was 196 white collar and 291 blue collar workers for a total of 487 employees.

In 1974, IAAFE operated 200 seven-ton freight cars, 22 60-seat passenger cars, five 1,750 hp-locomotives, one 1,500 hp locomotive and two 500 hp

CIVIL AVIATION

switch engines. The maximum design speed of the roadbed is 100 km/hr. IAAFE maintains seven stations, and a single traffic control center.

IAAFE's income in 1974 amounted to \$425,467 from the transport of 392,118 passengers (totaling 43 million passenger/kilometers) and 97,924 MT of freight (totaling 10.3 million ton/kilometers). Both IAAFE's freight and passenger movements have declined since 1972's record levels of 236,324 MT of freight and 413,706 passengers. During 1974, cargo traffic fluctuated between 14,000 MT in January to a low of 2 000 MT in September. Passenger traffic was much steadier, with the greatest number of passengers carried during April (54,699), and the fewest during May (26,343).

Currently, construction is underway on a new 89-kilometer road between the phosphatic rock quarry at Riecito and the IVP (Instituto Venezolana de Petroquímica—Venezuelan Institute of Petrochemicals) fertilizer plant at Moron. Total railroad cost is projected at \$20 million. Tenders have been published for two 2,000 hp locomotives and 70 hopper cars, which will be required to transport an estimated 1 million tons of phosphatic rock per year.

IAAFE expansion plans for the period 1976–80 call for the construction of 3 new roads with a total length of 1,160 kilometers. The routes and lengths of trackage of these new roads are as follows:

1. Yaritagua—Acarigua—Villa Bruzual—Guanare—Barinas 244 km
2. Acarigua—San Carlos—Valencia—San Juan de los Morros—Valle de la Pascua—Tuy Medio 468 km
3. Valle de la Pascua—Ciudad Guayana 448 km

IAAFE has recently received offers of assistance from the British Railway Corporation, whose president visited Venezuela during a recent South American tour.

Airlines

The Ministry of Communications, through the Directorate of Civil Aeronautics, is responsible for promotion and regulation of Venezuelan civil air transport. The principal functions of the Directorate are:

- Development of a domestic civil aviation policy.
- Jurisdiction over and administration of national and international airports, the airways, air navigation facilities and air traffic control.
- Technical supervision and inspection of aircraft and the issuance of airworthiness certificates.
- Approval of domestic and international airline schedules and tariffs.

The Directorate of Civil Aeronautics has the following divisions: National Airways (which includes ATC); Legal; Flight (including the technical departments and licensing); and airports. The Directorate also operates the Miguel Rodriguez Civil Aviation Training Center, which consists of a pilot school and a school for air traffic controllers.

VIASA (Venezolana-Internacional de Aviacion S.A.—Venezuelan International Airline) is Venezuela's international flag carrier. Aerovias Venezolanas S.A. (Venezuelan Airways Inc.) owns 45% of VIASA, and is in turn 30% owned by Pan American World Airways. The other 55% of VIASA is owned by the Venezuelan Government through Corporacion Venezolana de Turismo (Venezuelan Corporation of Tourism) an autonomous agency. VIASA has been successful in maintaining a good service and safety record and, as seen from table 8, has succeeded in gaining an increasing share of the passenger and freight market.

VIASA's air fleet currently includes two DC-8 33s, 52s, 63s, and two DC-10s, with the option for a third. VIASA also operates one DC-9 30 owned

Table 8.—International air traffic scheduled flights,¹ 1964-74

Year	Passengers carried		VIASA ² (percent)	Cargo carried (MT)		VIASA ² cargo volume (percent)
	All carriers	VIASA		All carriers	VIASA	
1964	299,589	68,262	22.8	28,551	1,017	3.6
1965	345,943	91,288	26.4	34,438	1,449	4.2
1966	392,078	96,372	24.6	29,404	1,815	6.2
1967	463,108	125,364	27.1	30,141	5,302	17.6
1968	535,412	152,744	28.5	32,739	14,643	44.7
1969	556,748	182,578	32.8	38,327	20,661	53.9
1970	669,055	225,637	33.7	39,331	18,797	47.8
1971	718,693	254,574	35.4	47,851	21,663	45.3
1972	860,401	297,400	34.6	51,554	21,375	41.5
1973	994,982	385,831	38.8	58,135	25,983	44.7
1974 ³	1,042,324	426,088	40.9	66,584	29,236	44.0

¹ Arrivals and departures.

² Percentage of all Venezuelan origin or destination international traffic.

³ Preliminary figures.

Source: Civil Aeronautical Directorate, Communications Ministry.

Table 9.—Domestic civil air transport,¹ 1964-74

Year	Passengers carried		Aeropostal ² (percent)	Cargo carried (MT)		Aeropostal ² cargo volume (percent)
	All carriers	Aeropostal		All carriers	Aeropostal	
1964	761,958	324,235	42.0	19,164	6,492	33.9
1965	845,626	354,295	41.2	17,178	6,461	37.6
1966	949,229	400,500	42.2	18,131	6,566	36.2
1967	970,631	429,481	44.2	20,351	6,567	32.3
1968	975,851	429,958	44.1	16,680	7,688	46.1
1969	970,163	437,806	45.1	17,937	8,810	49.1
1970	1,026,469	474,177	46.2	15,999	8,192	51.2
1971	1,055,343	479,325	45.4	13,958	6,927	49.6
1972	1,261,947	520,078	41.2	17,559	7,631	43.5
1973	1,454,393	653,032	44.9	11,051	7,356	66.6
1974 ³	1,605,792	696,632	43.4	9,806	7,503	75.8

¹ Represents departures only of scheduled and nonscheduled service.

² Percentage of all domestic traffic.

³ Preliminary figures.

Source: Civil Aeronautical Directorate, Communications Ministry.

Table 10.—Venezuelan air passenger traffic development through principal airports,¹ 1964-74

(in thousands of passengers)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974 ²
Marquetia	796	913	1,054	1,117	1,287	1,317	1,469	1,565	1,818	2,104	2,274
Maracaibo	269	300	323	321	324	293	304	306	338	381	420
Porlamar	104	124	149	150	140	136	152	165	241	344	407
Barquisimeto	51	58	69	82	97	93	103	110	128	146	156
Barcelona	81	94	101	89	88	82	94	94	114	140	145
Merida	34	42	51	58	61	60	71	74	84	88	93
Puerto Ordaz	35	48	55	56	54	63	70	79	82	115	116
Ciudad Bolivar	47	52	52	47	47	83	94	75	75	96	110
Cumana	56	62	65	64	58	53	56	61	81	91	93
Maturin	58	59	60	52	49	47	53	51	53	60	65

¹ Includes airports with 1972 passenger volume of 50,000 and more. Domestic and international passenger arrivals and departures, scheduled and nonscheduled service.

² Preliminary figures.

Source: Direccion de Aeronautica Civil, Ministerio de Comunicaciones.

by AVENSA. VIASA's cargo operations, named TRANSCARGA, operates one DC-8 F.

A total of 12 foreign airlines provide scheduled service to and from Venezuela. In June 1974, there were 53 weekly flights to the United States, 34 to Europe, 42 to points in South America and 28 terminating in Caribbean Islands. Only Pan American World Airways and Delta Airlines have been designated as U.S. carriers to Venezuela.

LAVA (Linea Aeropostal Venezolana—Venezuelan Airmail Line) "Aeropostal" is owned entirely by the Venezuelan Government. Its charter provides that it service areas of Venezuela where traffic volume would not justify commercial service. Aeropostal's fleet numbers about 25 aircraft, including C-46s and C-47s, AVROs and a few DC-9s. It serves 38 Venezuelan cities and has flights to Curacao and Trinidad. Aeropostal has its own maintenance facilities.

The private company AVENSA operates only within Venezuela, serving 24 commercial airports with one or more daily flights. It covers all the high-density routes between Venezuela's major cities. AVENSA's fleet includes CV-340s and CV-540s,

DC-9s, and a few C-47s used for cargo and charter service. Maintenance and flight crew training reportedly meet high standards. AVENSA's cockpit personnel follow Pan Am training procedures.

Light Aircraft Operations

In addition to the three airlines described above, several air taxi operators serve the less densely populated areas of the country on a "semi-scheduled" basis. These operators fly from outlying airports to ranches, diamond camps, construction sites, mining areas, etc., in single and two-engine fixed-wing aircraft, and helicopters. Besides providing air transportation to remote areas of the country, they provide a variety of other services such as crop dusting, spraying, and sowing, (principally using Piper Pawnees and Grumman AG Cats), aerial photography, air ambulance service, pipeline and power transmission line inspection, etc. Such firms are numerous. Principal among them are ATSA (Aerotecnica S.A.) with operations in Acarigua and other towns; AeroVen, based in Ciudad Bolivar; and SANTA and ACASA both based in San Fernando

de Apure. ATSA is by far the largest operator of light aircraft in Venezuela. The firm operates approximately 25 light aircraft. The majority are used for cropdusting. In addition, it operates two DC-3s and 15 helicopters (including several Jet Rangers). They are used for executive transport, oil field service, and air taxi service. In 1974, ATSA ordered several helicopters (of up to 14-seat capacity) for passenger transport.

Venezuelan general aviation aircraft purchased during 1976 are expected to be:

Cropdusters	50
Executive jets	6-10
New general or utility aircraft	100
Used general or utility aircraft	40
Navigational aids checkout and evaluation aircraft	2
Helicopters for police use (Jet Ranger type)	4
Helicopters for offshore petroleum well service and exploration work	10

Civil Aviation Register

According to Venezuela's civil aviation register, of 903 aircraft registered, 612 carried "T" (tourism) licenses, 33 "O" licenses (owned and operated by government agencies), 142 "E" licenses (special purpose such as fumigation and photography), 100 "C" licenses (commercial transport) and only 16 had "P" licenses (private company-owned, equivalent to executive transport). An awkward licensing system, aggravated by the fact that T-licensed aircraft pay no landing fees, has resulted in many ostensible pleasure and tourism aircraft being utilized as executive transport, air taxis, and other commercial purposes. While Venezuelan aeroclubs are charged with the supervision and avoidance of such violations in practice, this requirement is without effect. A great deal of discussion has resulted from the Ministry of Finance's imposition in mid-1975 of a 70% ad valorem duty on imported aircraft. Some aircraft manufacturers' representatives feel the imposition of this import duty may have been intended to correct the misapplication of current registration regulations. Aircraft used for commercial purposes reportedly will be granted a partial or full duty exoneration, while crop dusters will continue to enter Venezuela duty-free.

A study of the register by model and manufacturer reveals that only 27 of the aircraft being flown in Venezuela are non-U.S. models, 14 are in scheduled airline service. Registrations by manufacturer included:

Cessna	372
Piper	150
Beechcraft	141

Mooney	40
Grumman	37
Rockwell International	31

There were still 22 units of various C-47 and DC-3 models in regular service.

Aircraft Maintenance Facilities

Venezuela's maintenance facilities for large aircraft are located at Maiquetia International Airport. The largest shops are those operated by AVENSA. It services its own aircraft, KLM's, and a number of private customers' DC-3s, Catalinas, DeHavillands, Fairchild, and Convairs. Approximately 500 employees work three shifts and are capable of performing major airframe work, hydraulic and electrical repairs, radio and instrument repair and complete overhaul. Several shops are doing reciprocating engine overhaul or major jet engine repairs; these operations are performed abroad. LAV maintains similar but smaller facilities at Maiquetia. It also has an overhaul shop for jet-prop engines, although hot sections are sent abroad.

VIASA has on-line maintenance facilities for its own aircraft and for those of its pool partners, but all major repairs and structural work are being done for it by KLM in the Netherlands. The agreement also covers flight crew training.

ATSA operates a complete helicopter overhaul plant at its main base at Acarigua. Small aircraft maintenance facilities at La Carlota Airport, a light aircraft airport in eastern Caracas, provide all services except engine overhaul. Some of these shops are owned and operated by aircraft dealers; others are independent shops. La Carlota also has a well-equipped avionics and instrument repair facility named Nav-Y-Com. Smaller facilities are located at Ciudad Bolivar, Maturin, and Barquisimeto. Parts supply is generally handled by local aircraft dealers and through a few independent parts dealers such as Airparts S.A. located at La Carlota.

All repair facilities are subject to inspection and licensing by the Operations Division of the Directorate of Civil Aeronautics. While aircraft repair shops may employ unlicensed mechanics, they can work only as helpers and are not authorized to touch certain critical parts of aircraft and engines. Venezuelan general aviation maintenance is generally considered to be adequate.

A 1974 decree reserved for CVP (Corporacion Venezolana del Petroleo-Venezuelan Petroleum Corporation) the rights for all domestic distribution of hydrocarbon products. CVP is gradually taking over the retail distribution facilities of the private foreign-owned oil companies which currently distribute all aviation gas, jet fuel, and lubricants. Aircraft refueling is performed at most airports by

tank trucks. The airport at Maiquetia will have underground refueling points at the ramp, once its current expansion is completed.

Airport Construction and Remodeling

Venezuela has seven international airports, 51 national airports, and 236 privately-owned and operated airfields. The Venezuelan Air Force has five airbases, of which all but one are located at civil airports.

The Airports Division of MOP (Ministerio de Obras Publicas—Ministry of Public Works) is responsible for construction and improvement of all Venezuelan airports except Maiquetia International Airport. A separate organization, Oficina Ministerial del Nuevo Aeropuerto de la Maiquetia, (Ministerial Office for the New Airport of Maiquetia) was created in MOP for the administration of the Maiquetia expansion. Maiquetia is operated by the Instituto Autonomo del Aeropuerto Internacional de Maiquetia (Institute for the International Airport of Maiquetia), organized under the Ministry of Communications. All other airports are operated by the Directorate of Civil Aeronautics.

Excluding Maiquetia, MOP expects to spend approximately \$100 million on airport and runway construction and improvements during the period 1976–79. At this time, major projects will be undertaken at the cities of Barcelona, Barquisimeto, Merida, and Ciudad Guayana. These will focus on expansion of terminal facilities and runway extensions, and participation will be limited to Venezuelan firms, although such firms may have foreign partners or consultants.

A new international airport with a runway capable of accommodating jumbo jets was recently completed on Margarita Island. Work has been completed on the new control tower and a 11,500 ft. runway at Maiquetia. A new international and domestic traffic terminal is presently under construction, and will likely be completed in late 1976.

Air Traffic Control and Navigational Aids

All traffic control facilities and personnel in Venezuela are subject to the control of the National Airways Division of the Directorate of Civil Aeronautics, which also trains personnel through its Miguel Rodriguez Civil Aviation Training Center.

The Directorate is presently elaborating an extensive improvement plan for navigational aids. Some of these acquisitions are discussed below. The overall project, which has not yet been formally approved, foresees the purchase of five ILSs, the expenditure of \$1.3 million for non-directional beacons (NDB), \$23 million for various VOR/DME installations, and \$8.8 million for three route surveil-

lance radars. A total of \$350 thousand per year has been budgeted for contracted maintenance of navigational aids. The project also provides for upgrading the air traffic controller school, which presently operates without simulators of any type.

The Maiquetia Airport Project Office (Oficina Ministerial Nuevo Aeropuerto de Maiquetia) of the Ministry of Public Works, in cooperation with the Venezuelan Air Force, has been studying the feasibility of a national airspace control project. This would consist of five or six 250-mile surveillance radars whose data would be fed to a common control center for joint air force-civilian use. It is estimated that this project, including civil engineering, control center and microwave links, would cost more than \$100 million. At this stage, it cannot be stated with any degree of assurance when or whether the envisioned system in this project will be installed.

The air traffic control center for Venezuela is located at Maiquetia International Airport. Maiquetia's Flight Information Region borders those of FIR San Juan, Curacao, Bogota, Barranquilla, Belem (Brazil), Piarco (Trinidad), Zunderi (Surinam), and Atkinson (Guyana).

Maiquetia has teletype and HF/VHF radio connections with all the above FIRs, as well as direct telephone contact with San Juan, Bogota, and Curacao.

At the present time, Venezuelan Civil Aviation authorities operate one 80-mile range terminal radar—a British Plassy ASR Mark II at Maiquetia. An 80 mile range Italian Selenia unit is to be installed at Maracaibo. These radars are for terminal area surveillance and do not have approach control capability. Another terminal radar is to be installed at Margarita International. A 250-mile range route surveillance radar will be operative near Maiquetia before the end of 1976. A secondary SSR radar with automated air traffic control capability and 22" alphanumeric displays and a Doppler VOR have also been contracted for Maiquetia. Presently, only Barquisimeto and Maiquetia have operative ILS, with Maracaibo, Margarita International, Barcelona, Maturin, and Puerto Ordaz scheduled to have such systems in the near future.

The AVENSA aircraft are controlled by 18 VORs and 28 NDBs. The country's only DME installation is at Maiquetia. Venezuela has thirty regularly manned control towers, of which two are operated by the Venezuelan Air Force. The Directorate of Civil Aeronautics operates one Beechcraft King Air for avionics checkout and evaluation.

Airline Aircraft Acquisition Programs

The fleets of VIASA, AVENSA, and LAV (Aeropostal) were described earlier. Unofficial

sources estimate that the following acquisitions might be made before the end of 1977:

VIASA

- 1 DC 1—30 (now optioned)
- 1 DC 8 pure freighter (used for Transcarga)
- 1—2 DC 8 series 60

Beyond 1977, scarcity of serviceable used DC-8s may compel VIASA to begin to integrate other makes of aircraft with characteristics and capabilities of the DC-8 to meet its schedule and capacity requirements. VIASA is reported to have entered into a pool agreement with Air France and British Airways to inaugurate SST (Concorde) service in January 1976 with two weekly flights each to London and Paris from Maiquetia.

AVENSA

- 2 DC 9—50

LAV (Aerpostal)

- 1 DC 9—50
- 2 DC 9—30 (used)
- 6 feeder line aircraft (of the Swearingen Metro or Beech 99 size)

LATINCARGA

This privately owned air freight carrier currently operates 2 C-46s. As its cargo volume continues to grow substantially, possibilities are good that LATINCARGA will acquire several used aircraft such as the DC-6.

CVIA

CVIA (Corporacion Venezolana de Industria Aeronautica—Venezulean Corporation for the Aeronautical Industry) is an autonomous agency of the Ministry of Defense that is to receive funding from the Venezuelan Investment Fund. The CVIA re-

cently contracted for a wide-ranging feasibility study by French consultants to lay the ground work for the future development of the agency. Initially, the CVIA is likely to own and operate a complete aircraft maintenance facility to be located on or near the Venezuelan Air Force's principal airbase at Maracay. The depot's capabilities will include airframe, engine, and avionics maintenance and overhaul. CVIA's longer range plans include assembly, and later, manufacture of light agricultural planes and one model each of a single and twin-engine general aviation aircraft. Foreign firms reportedly will be invited to submit proposals for the installation of such an operation and to hold equity participation in the project. CVIA would then assemble or manufacture as many as 120 crop-dusters per year and a large proportion of the general aviation aircraft currently being imported. The CVIA is said to have received indications of interest from U.S., Israeli, Soviet, and French aircraft manufacturers to establish either assembly or manufacturing operations in Venezuela. The Israeli offer relates to mid-size utility aircraft for commercial feederline and military transport use, while the Russians have proposed the assembly/manufacture of the interurban STL YAK-40. The French firm, Dassault, has proposed the installation of a Mirage jet fighter assembly/manufacturing operation in Venezuela. The purchase of significant additional numbers of Mirage aircraft by the Venezuelan Air Force is reportedly a pre-condition to the establishment of a local Mirage facility.

A critical factor which could impede CVIA's achieving its aircraft production goal would be the prior assignment of the "aeronautical industries" manufacturing category by the Andean pact to Colombia, where Piper already operates an assembly facility.

9 Communications

The communications sector has been somewhat neglected in Venezuela in recent years. However, it is slated to benefit from increased official attention over the next 5 years. Close to \$800 million is earmarked to upgrade and expand the national telephone and telex networks. Mobile communications equipment is needed by law enforcement agencies, and modern equipment will be required to meet new marine safety standards. Furthermore, the antiquated system of frequency assignments is scheduled to be modernized, thereby eliminating a major obstacle to the expansion of the mobile radio market. Finally, color TV transmission will probably be adopted within the next 5 years.

These developments represent excellent sales opportunities for U.S. companies. With the shortage of well-trained technicians, most buyers place a premium on simple, easy to maintain equipment. U.S. firms are highly respected in this regard.

THE MINISTRY OF COMMUNICATIONS

This Ministry, the key organization in the communications sector, is responsible for both communications and transportation systems including the merchant marine, railroads, and civil aviation among others. In communications, the Ministry is responsible for the regulation of telecommunications, the operation of the national telephone system, and the telegraph and postal services.

The Directorate of Telecommunications within the Ministry is functionally similar to the Federal Communications Commission (FCC) in the United States. One of its major subdivisions, the Office of International Affairs, is responsible for the interconnection of the national telecommunications system with international systems, and represents the country in international forums on telecommuni-

cations matters. The Engineering Division controls the allocation of radio frequencies. The Licensing and Monitoring Division regulates radio and TV broadcasting, licenses the establishment of telecommunications stations and supervises the regulations governing communications concessions granted by the government. The Directorate is also responsible for the operation of the national telegraph system; the national airline, Linea Aeropostal Venezolana, is responsible for international telegraph traffic. The Directorate is trying to separate its service function from its control functions and has proposed that an Institute of Postal and Telegraph Service be established.

In July 1975, a bill was presented to Congress which would create such an organization and it is expected that the bill will be passed into law. This Institute, scheduled to become operational in early 1976, will combine the national and international mail and telegraph services under one organization. The Postal Service has been operated by the Directorate of Mails in the Ministry of Communications. Both mail and telegraph service are considered to be weak, requiring energetic measures to restore them to an acceptable level of efficiency. The initial operating budget is expected to be at least \$35 million annually, the equivalent of the budgets for the two present systems.

The national telephone company, Compañia Anonima Nacional de Telefonos de Venezuela (CANTV), is a semi-autonomous corporation operating under the responsibility of the Ministry. It is responsible for the major portion of the country's public telephone service, although there are still many private telephone systems operating in the country. The directors of the company are political appointees. The Ministry approves the company's plans and budget as well as contracts for more than Bs. 5 million (approximately \$1.2 million). As a government corporation, the company pays no

taxes and no import duties. Financing for its projects, however, is not provided by the government. In the past, the company has financed its expansions through banks, internal resources, and at times with supplier credits. Its capital stock in 1975 was \$113 million.

The Ministry of Communications has not been adequately funded in the past. As a result, the communications system within Venezuela suffers from antiquated equipment and poor organization. In the opinion of the Ministry, the lack of effective communications systems is hindering the general development of the economy. The Ministry has drafted a plan to improve the situation, the general budget for which is indicated in table 1. In addition, the Ministry is considering the formation of a holding company which would include CANTV, the proposed Institute of Postal and Telegraph Services, and manufacturers of telecommunications equipment. Although this concept is in the early planning stage, it is indicative of the government drive to improve communications services.

Table 1.—Expenditures summary of the Federal Development Plan for Communications, 1976-80
(in millions of U.S. dollars)

<i>Projects</i>	<i>Planned expenditures</i>
Ministry of Communications	
Public Telegraph Service	7.0
Marine Telecommunications	3.5
Civil Aviation Telecommunications	1.5
Rural Telecommunications	23.4
Public Service for Facsimile and Telephoto Transmission .....	.1
Dedicated telecommunications network	1.5
Public Telex Service .....	.8
Technical Verification System for Radio Broadcasting	18.7
Quality Control of Telecommunications Services	2.3
Quality Control of Telecommunications Equipment and Systems	1.2
Others	1.5
Subtotal	61.5
CANTV	733.0
Total	794.5

Source: CORDIPLAN.

TELEPHONE AND TELEX

CANTV has adopted several policies which will expand its role as the major provider of communications services within Venezuela.

The President of CANTV has identified the major weaknesses of the company and the network as (1) a low level of efficiency (24.67 workers per 1,000 subscribers); (2) problems in network plan-

ning, programing, control, and regulation; (3) the lack of adequately trained personnel; (4) the level of unsatisfied demand (in 1974, only 50.51%), and (5) low telephone density (5.21 per 100 inhabitants in 1974).

These problems will be attacked in an ambitious 6-year plan (1975-1981). The primary goals of the plan are to increase satisfied demand to 80%; raise the density of telephones to 10 per 100 inhabitants; increase operating efficiency to 16 workers per 1,000 subscribers; and satisfy 100% of telex demand by 1981. In addition, the company will realign its activities with Venezuela's development priorities. In the past, CANTV has concentrated on providing service to the more important cities. Its new development plans will place greater emphasis on providing service throughout the country, particularly to rural, industrial, and commercial users, and to lower income areas.

Under the 6-year plan, telephone service is to be brought to all cities with a population of 2,500 or more by 1981.

To increase the country's industrial base, CANTV will participate in the production of equipment required for its expansion. Such capabilities will usually take the form of joint ventures with private firms. An example is Maplatex, a firm which produces telephone sets under license from Ericsson. CANTV has a 45% interest in the firm and controls decisions on quality, price, and technology used. It continues to buy telephone sets from other sources, however, in order to maintain the price competitiveness of the firm. This arrangement has several advantages for the company; it creates industrial development, saves foreign exchange and reduces the company's dependence on foreign suppliers.

Moreover, the company is undertaking its own research and development program to reduce its dependence on foreign technology. Since the company is hampered by a shortage of adequately trained personnel, this area of its activities will progress slowly. In May 1975 it had five major research projects underway. These included development of a technique for telephone transmission over electric power lines, and digital radio communications.

Table 2 shows the installed capacity of CANTV at the end of 1974 according to various indicators and the goals of the 1975-81 investment program. Table 3 data are the preliminary estimates of expenses by year for each major equipment categories. Both tables should be read as orders of

Table 2.—Selected indicators of CANTV expansion, 1961-81

	Total through 1969	Amount increase 1974	Total through 1974	Planned total through 1975	Planned increment 1975-81	Planned total through 1981	% change 1975-81
Subscribers	248,165	47,744	425,296	488,443	640,704	1,066,000	150
Telephones	376,853	—	842,620	—	657,380	1,500,000	78
Percent satisfied demand	39.2	—	50.5	54.5	—	80	—
Telephone density	3.8	—	5.2	3.9	—	10	—
Lines internal plant	336,640	103,000	611,180	252,930	950,000	1,561,180	155
External plant, central pairs	434,519	73,500	761,759	886,638	—	1,500,000	297
Domestic long distance lines	4,580	4,920	27,640	30,840	57,000	84,640	207
Pay stations	965	1,180	5,145	6,645	—	—	—
Domestic long distance channels ...	2,584	1,452	10,725	16,903	60,000	70,725	561
Trunk pairs (Km)	36,450	—	—	—	—	3,027,000	—
International long distance lines	600	—	2,000	2,000	3,000	5,000	178
Telex exchanges	12	—	—	—	10	22	—
Telex lines	1,640	600	3,548	5,020	10,500	15,520	342
Telex subscribers	683	942	2,865	4,113	—	8,300	287
Telex international lines	—	—	575	—	—	1,700	—
Telephone international channels	118	84	373	553	—	—	—
Percent satisfied demand Telex	—	—	—	—	—	95	—

Source: CANTV.

Table 3.—CANTV preliminary investment budget, 1974-81
(in millions of U.S. dollars)

	1974	1975	1976	1977	1978	1979	1980	1981	1974-81
Terminals	2.3	4.2	5.1	6.1	7.7	8.4	9.3	12.4	55.5
Local network	62.9	76.4	78.5	92.0	99.5	127.1	141.1	144.8	822.3
Domestic long distance	12.9	25.7	27.2	16.4	17.8	19.9	12.7	11.0	143.6
International long distance	3.5	2.6	11.9	7.7	.2	.4	4.7	.5	31.5
Telex exchange	3.9	5.6	6.3	9.1	6.8	10.3	7.0	8.9	57.9
Total investment	85.5	114.5	129.0	131.3	132.0	166.1	174.8	177.6	1,110.8

Source: CORDIPLAN.

magnitude instead of firm figures since the targets will inevitably be adjusted in the light of actual experience. In general, the plan calls for a 14% annual expansion of the network, involving the addition of some 120,000 lines a year. The company operates one ground satellite station and may construct another. CANTV is installing two submarine cables; one to St. Thomas for international traffic to North America, and one to the Canary Islands for communications with Europe.

Initially, almost all of the equipment needed for the planned expansion of the telephone and telex systems will be imported. Due to the long lead times required for the delivery of telephone equipment, a substantial amount of the equipment to be installed during the 6-year period is already on order, mostly from Japan and Europe. U.S. equipment is at a disadvantage since the original telephone systems installed were European and the present system is based on CCITT standards.

The principal suppliers of equipment are Ericsson of Sweden; ITT, supplying from Belgium and Spain; Hitachi and Nippon Electric from Japan; Siemens from Germany; and General Telephone

and Electronics (GTE), supplying from Italy. Ericsson and ITT have been sharing the market for central office switching equipment on about a 60/40 basis. Both companies do some local assembly mostly using imported components. Hitachi and GTE are the major suppliers to the microwave market, with Hitachi providing the eastern branch of the national network and GTE installing the western branch. GTE was awarded a contract for an additional expansion of the microwave network to be completed by 1978. Nippon Electric recently has been supplying equipment for mobile exchanges. Siemens has a contract running through 1978 to expand the telex system. Three local manufacturers supply most of CANTV's cable requirements. However, these companies do not yet produce stalpeth insulated cable, and CANTV has been importing this type of cable.

In 1976 CANTV plans to install two GTE electronic switching units. The company may change to electronic switching after 1980 pending the results of these initial installations. On the other hand, CANTV was negotiating with Ericsson, and others, on the possibility of manufacturing me-

chanical switching equipment in Venezuela. A decision to proceed in this direction would make a shift to imported electronic switching equipment difficult in the foreseeable future. While it would be possible to assemble electronic switching units in Venezuela, the necessarily high degree of dependence on imported components and technology would seem to inhibit a decision to do so.

CANTV also has been considering the construction of another telephone cable plant. Such a plant would produce jelly and/or stalpeth insulated cables. Three companies presently produce telephone cable, two under foreign license and one with its own technology. The largest of these, Cabel, underwent an expansion about 5 years ago and still has about 40% unused capacity. Cabel has the capability of producing stalpeth insulated cable with relatively little additional investment. The second largest producer, Alcave, also has been undergoing an expansion and was to be in its new plant in early 1976. Both companies are exporting cable in small amounts. It is not clear why the government would want to erect a new cable plant considering existing plant capacity.

One problem presently facing CANTV is that end users have been permitted to purchase and install communication terminals of all types without approval of or registration with CANTV. Consequently, the company has only a rough idea of the type and number of terminals connected to its system. A regulation does exist requiring CANTV approval of equipment installed on its lines, but the rule has not been enforced. According to one CANTV engineer, it is possible to transmit data over a CANTV line all day and pay only \$.02, the price of a phone call. The company obviously wants to and must control its system more effectively. There is only one local company that manufactures telephone sets, Malplatex. Foreign firms continue to sell telephone sets since Maplatex, new in this business, cannot satisfy the national demand. However, once Maplatex reaches a production level approaching national demand, the company would be able to obtain tariff protection, effectively curtailing other sources of supply. Thus, CANTV will be in a better position to know the number of telephone sets being added to its network.

CANTV is also considering some form of participation in the supply of data transmission equipment and terminals to its customers. However, trade sources do not believe that CANTV will be able to participate in such activities in the near

future, because of manpower limitations and its otherwise ambitious expansion plans.

PABXs are currently manufactured in limited numbers in Venezuela by a local firm with its own design. However, these are small units (4 trunks, 20 extensions) that have limited capability in that the free extensions cannot interconnect when all four of the trunks are occupied. The import market for PABXs is dominated by Siemens with an estimated 45% share. Tele Norma, another German firm, takes around 25%, ITT 15%, GTE, 10%, and Ericsson 5%. Siemens assembles PABXs in Venezuela. It is planning to begin more extensive local manufacture in 1976. Initial production will accommodate about 15,000 extensions a year. The company also plans to assemble telephone sets in Venezuela. Increased demand for PABXs is expected to concentrate in the interior of the country where the fastest industrial growth is occurring. According to trade estimates, the annual market for PABXs approximates \$12 million.

Telex units are not manufactured in Venezuela. Siemens supplies 100% of CANTV's need and will continue to do so through 1978. About 60% of the private market is also controlled by Siemens. The rest of the private market is shared by ITT and Olivetti, with 15% each, GTE 7%, and Sagem, a French firm, with 3% of the market. ITT sells its own units and also represents Teletype Corp.

Data Transmission

CANTV leases telephone lines for data transmission, but is not involved in leasing of equipment. Transmission is usually done on voice quality circuits with a maximum transmission capability of 2,400 baud. Higher transmission speeds can be obtained by leasing dedicated lines from CANTV. Data transmission is governed by rule M-102 of the White Book, CCITT Standards. The law requires that all equipment must be tested and approved before attachment to lines. However, this is not always enforced. Data transmission is relatively rare in Venezuela, but is growing particularly in the banking, government and education sectors as well as in commercial time sharing companies. The oil companies have done some data transmission on their own circuits.

Rural Telecommunications

In addition to CANTV's plan to bring telephone service to communities of 2,500 inhabitants or more, the Ministry of Communications has also

budgeted about \$23 million for rural telecommunications as an adjunct to this six year expansion program. Much of this funding will be spent on VHF point-to-point radio equipment for communications to rural communities.

Telegraph

As previously noted, the telegraph system is presently operated by two entities. The domestic service provided by the Directorate of Telecommunications and the international service provided by Lineas Aeropostal Venezolana (LAV). LAV took over this function in 1969 from All America Cable and Radio Inc. reportedly as a temporary measure until a single telegraph company could be formed.

There are 735 telegraph stations in Venezuela, grouped into 17 operating zones. International telegraph service is routed through the international center in Caracas. The service is in need of major upgrading in all areas of equipment and operating standards. The problems are: Inconvenient station locations, antiquated equipment, insufficiently trained personnel, and low productivity of telegraph operators. In July 1975, in proposing the creation of the Institute, the Minister of Communications stated that it cost the government \$34 for each \$3 in revenue received for telegraph services.

One of several reasons contributing to high operating costs is the lack of orderly development of the suburbs surrounding Caracas. Many areas have no clear addresses and since the suburbanites are big users of the telegraph service, this impedes an efficient delivery service.

In July 1974 a consultant from the United Nations recommended modernization of the telegraph system including the re-equipping of 700 telegraph offices and the installation of a computerized telegraph center in Caracas. Recommended actions already underway include the relocation of 10 telegraphic centers to more accessible locations in Caracas. In addition, considerable new equipment including teleprinters and Morse code machines have been installed, and lines and equipment in rural areas have been reconditioned. Construction of a new, computerized transmission center in Caracas was also planned as well as the replacement of existing teleprinters. Four companies bid on the project, none of them from the United States. This project will absorb most of the \$7 million indicated in Table 1 as planned investment in public telegraph services. Also as noted, in the same table, the project's public telex service and public service for

facsimile and telephoto transmission projects involve the telegraph service.

The mail, telegraph, and telephone services will be physically operated as a unit under single management to the extent possible, and particularly in rural areas. In selected areas of the country, telex, facsimile, and telephoto transmission facilities will be included in these public centers. The planned telecommunication program will require a total expenditure of \$794.5 million over the 5 year period through 1980. This includes \$1.5 million to be spent on dedicated telecommunications networks.

MOBILE RADIO

Another noteworthy development is the marine project planned by the Ministry of Communications. It will bring Venezuela's maritime communications in line with international safety of life at sea standards. Expenditures of \$3.5 million are planned for coastal station and ship to shore VHF radio equipment. An Omega direction finding system may be included. Apparently the new system will be integrated into existing HF equipment, which will be converted to single side band. Bids were to be requested on the system in late 1975. In addition to the equipment installed in this safety system, an increased demand for shipboard radio equipment is expected among ship operators, both pleasure craft and commercial, to meet the new safety standards. Present ship population is about 3,000.

The largest users of mobile radio in the country are the several police forces.

The National Guard exercises some police functions under the Ministry of Defense.

The Technical Judicial Police do investigative work nationwide under the Ministry of Justice.

The Metropolitan Police patrol the streets of Caracas and operate under the Ministry of Interior.

The Transit Police control traffic in Caracas under the Ministry of Finance.

The Municipal Police patrol cities in the various states. They report through a state police chief and the governor to the Ministry of Finance. The state police chiefs are now commonly selected from the officer corps of the National Guard.

There is presently no centralized purchasing by police forces in the country. The National Guard is served by the purchasing arm of the Ministry of Defense. Each of the police services operates on individually assigned frequencies which causes

some difficulty in communicating between themselves. Presently, there is a police communications control group in Caracas where representatives of each force monitor communications of the others and are responsible for transferring messages when necessary.

A bill currently under consideration by Congress would combine all police forces, including the National Guard, into a single National Police Force operating under the Ministry of Interior. Although there is some resistance to the concept, a precedent already exists in the use of National Guard officers for the state police. The bill was expected to be passed early in 1976. One effect of the law would be to centralize the purchase of equipment for all police forces.

The best equipped forces are the National Guard and the Caracas Metropolitan Police. The latter are in the process of installing a \$4 million radio communications system with data transmission capabilities and incorporating a Hewlett-Packard computer. The Technical Judicial Police communications system was studied in depth by an expert in the U.S. Agency for International Development in September 1974. It was found to be in serious need of upgrading. The study recommended spending approximately \$1.1 million on new equipment including teletypewriters, mobile transceivers, base stations, and repeaters, HF/SSB radio equipment, maintenance equipment and tools.

It is not clear how the creation of a National Police Force would affect the communications program. A Metropolitan Police official believes at least \$2 million would have to be spent to upgrade the equipment of other Police Forces to the level of the Caracas Metropolitan Police once the reorganization is complete. This would probably be in addition to the program of the Technical Judicial Police, since the states' municipal police forces could easily absorb \$2 million worth of new communications equipment.

The chief suppliers of mobile radio equipment in Venezuela are Motorola, RCA, and General Electric. These companies probably account for 90% of the market and the rest is divided among other U.S. and European companies.

In addition to police forces, there are a number of other important buyers of mobile radio equipment within the government such as the Ministry of Public Works and the electrical utilities. The oil industry, which was nationalized in December 1975, is the largest user of mobile equipment. There is also some use of mobile equipment by construction

companies and one taxi company in Caracas has about 200 units in operation. Growth in the use of mobile equipment in the private sector appears to be limited by the problems described below relating to cost and assignment of frequencies. Trade estimates place the total mobile radio equipment market at \$3 million to \$7 million annually with wide fluctuation due to periodic large orders placed by government entities. Mobile radios are not manufactured in Venezuela.

Frequency Allocations

The Directorate of Telecommunications within the Ministry of Communications is responsible for assigning radio frequencies. During 1974, the Ministry of Communications issued 1,235 licenses to radio operators; 22 for mobile marine, 316 for private radio communications, and the rest for ham operators.

Frequency assignments and registrations are issued by a Government Telecommunications Engineer; the one time fee is about \$120.00. All transmitters are registered regardless of size or relation to a system. Licenses are renewed annually; the license fee schedule is as follows:

Up to 9 watts	\$350
10 to 99 watts	470
100 to 199 watts	590
200 to 500 watts	910
Over 500 watts	1,200

The minimum cost for a 4 watt system with two transceivers is thus about \$820 for the first year and \$700 each year thereafter. Certain user categories do not pay for licenses. These include the government at all levels, ambulance and fire protection service organizations, marine radio operators, farmers and ranchers, as long as their stations are not located in Caracas.

Users and sellers of mobile radio have encouraged the government to reform its system. A plan is in the development stage for computerizing the information frequency assignment system. The project will be carried out using the CANTV computer. All phases of an effort to improve the control and regulation of telecommunications, including the frequency assignment process, are expected to take 3 to 4 years to implement.

PRIVATE COMMUNICATIONS

In addition to the publicly owned and operated communications system, there are several sophisti-

cated systems originally installed by private corporations, primarily the oil companies.

Creole Petroleum (EXXON)

The telephone system installed by Creole includes eight exchanges. One exchange has 1,600 lines, four have 800 lines each, two have 400 lines each and one is a 200 line exchange. The major exchanges are interconnected by leased microwave systems and the smaller ones are connected by cable. All but two are made by GTE and use Stowger stepping switches. The 1,600 line unit, in Caracas, is a British unit, and there is also one Western Electric unit. Consideration has been given to converting to a semi-electronic system, possibly in 1977. Fully electronic switching is considered too costly for the majority of small units employed.

The radio system includes 750 FM transmitters, 70% of which were produced by Motorola and 15% by G.E. A central control and message switching center is located in Maracaibo where an operator monitors all channels. About 50 transmitters have been replaced each year at an average cost of \$1,300 each. The only radio packs employed are those used on pumping stations in Lake Maracaibo as emergency backups.

The system transmits data between the Caracas computer and three computers outside of Caracas as well as to New York. Transmission speed is currently 2,400 baud, but this was scheduled to be stepped up to 7,200 baud with the installation of new modems in the latter part of 1975.

Shell

The teletype system installed by Shell is large. Two Philips DS 714 computers handle about 1.2 million messages a year. The system in Caracas serves as a backup to the Shell world system telex computer located in London. It includes four dedicated lines in Venezuela and 13 to points outside the country. Even with the high volume of traffic, the Philips computers are used only to 10% to 15% of capacity. Thus, the company had been considering a plan to increase the size of its telex network and offer telex service to other companies. The investment in new plant and equipment was estimated at about \$1 million.

There is a tremendous amount of unused capacity in Shell's telephone system. There are 12 exchanges in the system, 10 are Philips and two are Siemens. Two of these exchanges have capacity for 9,000 lines, two have 4,000 line capacity each, and

the rest are in the 400 to 500 line class. There are only around 3,000 lines actually installed in the bigger exchanges at present. Shell uses four-wire voice channels for data transmission between the IBM 360/75 located in Caracas and three other computers in the country. Transmission speed is 4,800 baud. The Company was planning to automate the refinery in Cardon which would have required replacing the IBM 360/70 there with a more powerful unit. Data transmission capability was to be substantially upgraded at the same time with the addition of a number of CRT terminals and remote processing equipment. It was planned that the company might then provide teleprocessing services on a fee basis. Shell had an extensive microwave system concentrated around Lake Maracaibo, where the largest units (360 channels) are located.

The Farinon microwave system is supplemented by two 60-channel Collins troposcatter transmitters. The latter, which were co-owned with Gulf, were earmarked for early replacement since the existing equipment was originally installed in 1958. Consideration has been given to the installation of 1,800 channels, if the present system is upgraded. There was some doubt that this would be done, however, because of CANTV's planned microwave link from Caracas to Maracaibo. Total cost was roughly estimated at \$500,000 for the transmitters, antennas, and exciter equipment and \$25,000 each for four stations. In addition to the troposcatter, the Company operates about 800 transceivers, about 600 in the Maracaibo area and 200 in Cardon. Approximately 500 of these units were made by Motorola and the rest by G.E. The company operated about 60 base stations with a ratio of not more than 15 receivers per station. The radios were being retired after 5 years; the last installations were made around 1972. Shell also had 10 low frequency channels for ship-to-shore communication in Maracaibo.

Mobil

Mobil had operations in both the eastern and western parts of the country. Its microwave system had two branches, each supplemented by Collins troposcatter 16 channel radios. In the western part of the country, 12 channels terminate at Barinas and four go on to Maracaibo, thus furnishing a direct link between Maracaibo and Caracas. This leg of the system was recently completed.

The telephone system includes a 600 line Siemens exchange in Caracas, a 400 line Etelco unit,

two 100 line, and one 30 line exchange. There is a small telex system operating through the microwave channels with Siemens terminals. The company used single side band radio for short distance communications with 31 car-mounted units and 79 stationary radios located in 6 base stations. These radios are all G.E. The emergency system the company installed is based on HF equipment made by RF Communications.

Mene Grande (Gulf)

This company has a large communications system whose basic features are a microwave link from Caracas to the eastern part of the country, and a troposcatter radio link between Caracas and the company's operation in the west. The microwave system consists of 24 channels to Puerto La Cruz and 48 channels south from there to the fields. The troposcatter system is the same as that used by Shell—the companies jointly own the system.

Equipment in the microwave system is basically Collins, but components from a number of other manufacturers have also been installed. Voice, telex, telephone, and some facsimile transmission are all included in both the microwave and troposcatter channels.

The Company telephone system included two 1,000 line exchanges and four 500 and 200 line exchanges. These are all GTE Stowger exchanges. There are two telex exchanges installed with a total of 20 Siemens terminals. The mobile radio system includes 575 units, 275 in the east with seven base stations, and 300 near Lake Maracaibo with ten base stations and one repeater; most are G.E.

The company had no expansion plans, and did not have a routine replacement program for its equipment.

Orinoco Mining Company

In 1975, this company depended primarily on radio communications, having only one direct private line connecting Caracas with Puerto Ordaz and one telex line leased from CANTV. A four channel troposcatter system is also used between Caracas and Puerto Ordaz. In the Guayana region, a multichannel 400 MHz unit has recently been installed for communications with Cerro Bolivar with eight voice channels and four control channels.

VHF mobile units are used for ship-to-shore communications, for security patrols, and for locomotive dispatching. There are approximately 400 radios in use between Puerto Ordaz and Ciudad

Piar, with 15 base stations. The equipment in use includes G.E., Motorola, and RCA. WABCO rail communication equipment was recently being tested. No additional changes were planned for the system for the immediate future.

Sidor

In 1975, the company operated Siemens telex terminals on leased lines to Puerto Ordaz. There were also four direct telephone lines to Puerto Ordaz. Data transmission was not employed but this was scheduled to change around the end of 1975 with the installation of two Siemens units.

Sidor also had about 100 radio units and a base station in Puerto Ordaz for fire, security, and miscellaneous uses.

BROADCASTING

Radio Broadcast Communications

There are approximately 150 commercial radio stations in Venezuela, over two-thirds of which have 10 kilowatts of power or less. Only one station has 100 kW. Privately owned broadcasting stations cover the entire national territory. It has been recently estimated that 86% of Venezuelan homes have a radio. By and large, station ownership is not concentrated. There are only three radio consortia: Radio Rumbos owns six stations, Mundial owns 12, and Radiovision owns eight. There are only two FM stations; one of these is a subscriber-funded station with no commercials.

The government has announced that as a general policy no licenses for new radio broadcast stations will be issued as there is a conviction that the field is saturated. The exception to this policy is that one new station will be permitted for each 50,000 increment to the population. The government also indicated that radio consortia will not be allowed to grow by absorbing smaller stations. There are no plans for a significant increase in FM broadcasting.

The government operates one station, Radio Nacional. Its coverage was scheduled to be expanded from its presently small area around Caracas to include the entire nation. Approximately \$47 million is planned for new repeater stations.

Radio communications in Venezuela are characterized by a number of problems for equipment users and sellers and government regulators. The area of communications has not traditionally enjoyed a high priority in government planning or

funding. Partially for this reason the system of frequency monitoring is poorly organized and equipment is scarce and outmoded. Quality control also is an area which has been sorely neglected.

Around \$19 million is scheduled to be spent by the Ministry of Communications on equipment and systems to improve its monitoring of radio communications in the period 1975 to 1980 (see table 1). In the past, the Government of Venezuela has received complaints from neighboring countries that Venezuelan radio stations have strayed from assigned frequencies and caused interference. The Radio Technical Verification System for Radio Broadcasting, is expected to solve the problem. This project involves the construction and equipping of five fixed radio monitoring stations along with a number of mobile units throughout the country. These stations will monitor public broadcasting stations to detect deviations from assigned frequencies. A note of warning on this project was sounded by one company which said it had prepared bids on this project four times in the past, and that the budgeted amount seems rather low in view of the remote locations of the projected monitors. However, four firms, of which two are U.S., are pre-qualified for this project and a request for bids on a turnkey package has been issued.

The project for quality control of radio broadcast services, equipment and systems will involve investments of about \$3.5 million. This project involves the creation of a government laboratory to test imported radio equipment to determine whether it conforms to specifications.

Television

There are four TV stations in Venezuela, all located in Caracas. Two are government-owned, and one of these is an educational channel. During 1975, the government planned to cover 85% of the national population and 123,000 square kilometers of territory with its own TV programming.

For several years there have been intermittent discussions on the desirability of introducing color TV transmission and debate over which system to use. U.S. and European systems have been studied, but no decision has been made.

The Central Office of Information has proposed a law regulating the cultural programming of all radio and TV stations and newspapers. The stated purpose of the proposed law is to stimulate Venezuelan culture in the media. It is not clear that this law will have any significant impact on the market for radio and TV equipment. There is no produc-

tion of radio or TV broadcast equipment in Venezuela, and U.S. suppliers are generally preferred.

MILITARY COMMUNICATIONS

The United States enjoys a favorable position in the supply of military communications equipment to Venezuela. The United States is the only government which supplies a Communications Advisor to the Ministry of Defense, and U.S. equipment is used to train Venezuelan officers. The U.S. share of the \$1 million to \$1.5 million annual market is over 95%. The only important recent competition has been from Israel, which produces military radios almost identical to some U.S.-made models. Israeli sources often offer better delivery times, and spare parts are readily available from the United States.

The most important military communications project now in progress is the construction of a microwave network to connect military headquarters in Caracas with various command posts around the country. The bid for this 5 year project was awarded to GTE which is sourcing from Italy. The work has been in progress for more than 2 years.

The Ministry of Defense has a shopping list of approximately \$17 million for various types of military hardware which it wishes to buy in the next 5 years; \$5 million of this is communications equipment (see table 4).

The Ministry is currently evaluating a proposal that certain tactical units be equipped with radio equipment which can interconnect with the microwave system mentioned above when the units are away from their command post. These might be UHF or troposcatter systems with six to 12 channels. Two such systems have been recommended for installation at a cost of approximately \$400,000, but the proposals had not been fully evaluated at this writing. The military maintains two service centers for repair and maintenance of communications equipment. These are quite well equipped and are manned by technicians trained in the United States. There is a potential market for repair vans which can be used to accomplish major repairs in the field.

The Ministry introduced centralized purchasing during July 1974 for the Army, Navy, Air Force, and National Guard. The Air Force frequently buys its communications equipment already installed in aircraft. Buying is often channeled through the Ministry of Defense Signal Corps, but the preferred means of purchase is through the Federal Military Sales Program of the U.S. Government which, because of the quantities involved, results in reduced

Table 4.—Communications equipment required by Ministry of Defense, 1975

(Total Value: \$5,605,000)

Description	Quantity
1 KW HF/ISB radio transmitting set four channel ISB and provision for remote control	17
1 KW HF/ISB radio transmitting set	10
230 VAC. power supply	27
1 KW HF automatic antenna coupler	19
Cable (100 ft) with two T-0002 connectors attached	27
Cable 37 conductor 100 ft.	27
Long wire adapter	27
Dry nitrogen kit	27
HF broadband dipole antenna	14
—including 100 foot tower and rotator control cable	2
—including 100 foot and rotator and 1,000 foot rotator control cable	2
Antenna, 35 foot fiberglass whip	9
Antenna vertical foot fiberglass whip, heavy duty for ship installation	10
Tone key converter to interface with teletype	35
HF SSE/ISB synthesized high performance receiver, 100 KHz. to 30 MHz TU-neable in 100 Hz. increments plus VFO	35
Four-channel ISB option	17
High impedance RF input transformer	35
Stack mounting brackets	35
Mute module	35
Interconnection kit for RF-130CR	35
Interface engineering	27
Full frequency remote control	17
Test set for RF-130CR transmitter	5
Base station SSB transceiver with channel crystals installed: 3610, 4250, 6490 & 8431.5 KHz	40
WOW/CW module	40
Telegraph Key	40
Modular antenna coupler for 150 foot antenna, with 4-model CU-721 channel modules for 3160, 4250, 6490 & 8431.5 KHz frequencies	40
Connector installation of 2 J-0002 connector onto 100 ft. of W-0010 cable	40
Cable (100 ft.) 17 conductor	40
VRC-740 (HF/SSBB) air	3
VRC-240 (VHF/AM) air ground	3
PRC-74 (SSB) ground	9
PRC-77 (VHF/FM) ground	36
PRC-600T (VHF/AM) ground	107
VRC-12-49 (VHF/FM) ground	3
SB-22-ft	3
Control Post AN/GRA-39	7

Source: Ministry of Defense.

prices. A local agent is usually required to be successful in these efforts.

CONSUMER ELECTRONICS

The Ministry of Development completed a survey of the consumer electronics industry in 1975, the results of which are summarized in table 6. There are approximately 50 firms either assembling or manufacturing radios, TVs and related components and parts locally. The 37 companies which re-

sponded to the survey questionnaire have a total net worth of just over \$16 million and employ around 2,400 people.

Although the existing domestic production capacity (see table 7) is not being fully utilized for any single product, the Ministry has been informed of expansions planned in several areas. These include amplifiers, TV channel selectors, fully transistorized units, record players, transformers, deflection yokes, 20 mm units for use in 12" TV receivers, and speakers. Details of these projects were not available from the Ministry, but sources stated that most of the projects were to be completed by the end of 1975.

In addition to the above, the Ministry has approved projects for the manufacture or assembly of teletypewriters; and electrical condensers of plasticized metal are produced by Electronica de Oriente, C.A. In 1974 a project was approved to produce medium and high capacity condensers and photoelectric controls. Also in 1974, MCM Electronica, S.A. registered a project to produce printed circuits. Enterpar, C.A., is the only company reported to be producing electronic calculators. These are basic types capable of the four basic arithmetical operations. In 1974 they registered a project to broaden their line. The Ministry also approved in 1974 a project to produce motors for record players and recorders. Delvalca, C.A. is the only company presently producing tape recorders.

MAIL

An indication of the annual volume of mail handled by the Post Office during the period 1972-1974 is shown in table 8. The Venezuelan Postmaster General estimates that there is approximately the same amount of mail being handled by 400-500 small private companies and individuals throughout the country. Although private mail delivery companies are technically illegal, they are tolerated because of the inefficiency of the official system. Improvements in the official service over a period of years is expected to cause the disappearance of these small companies.

The problems of the Postal Service have been graphically described by the Postmaster General. They include excessive centralization of Post Offices in inconvenient locations, insufficient number of public mail boxes, inadequate mail handling procedures, lack of training and supervision, and antiquated or inadequate equipment. Until July 1975, stamps were sold by the Ministry of Finance. The

Table 5.—Venezuelan imports of communications equipment by country of origin
(in U.S. dollars)

	June-Dec ¹ 1973	Share	Jan-Dec 1974	Share
Radiotelegraph and radiotelephone transmitters and receivers				
United States	432,978	62%	1,453,512	63%
Japan	206,958	30%	634,865	27%
Total	687,457	100%	2,297,385	100%
Parts for Radiotelegraph and Radiotelephone transmitters and receivers				
United States	885,617	54%	1,247,369	57%
Japan	309,386	19%	368,015	16%
Italy	291,501	18%	—	—
Total	1,614,850	100%	2,169,722	100%
Antennas for Radiotelephone and radiotelegraph transmitters and for radio and TV broadcasting				
United States	78,804	68%	159,097	59%
Italy	33,349	28%	96,290	36%
Japan	—	—	3,713	1%
Total	115,793	100%	269,736	100%
Antennas for radio receivers				
United States	25,340	15%	125,506	14%
Japan	126,110	75%	703,712	76%
Total	168,396	100%	926,185	100%
Automatic telephone exchanges				
United States	159	— ²	20,402	— ²
Germany	326,945	37%	1,399,556	58%
Argentina	149,810	17%	244,913	10%
Japan	142,673	16%	222,393	9%
Portugal	—	—	184,962	8%
Total	890,612	100%	2,404,332	100%
Other wired telephone and telegraph apparatus				
United States	678,476	7%	839,462	7%
Germany	781,433	8%	1,555,603	12%
Japan	2,509,760	26%	4,453,737	35%
Belgium/Luxumburg	957,207	10%	419,671	3%
Portugal	1,162,025	12%	1,140,320	9%
Sweden	1,347,258	14%	—	—
Total	9,680,067	100%	12,576,022	100%
Parts for automatic telephone exchanges and other wired telephone and telegraph apparatus				
United States	343,260	4%	562,441	6%
Germany	1,518,249	16%	149,374	1%
Belgium/Luxumburg	2,831,424	30%	2,153,009	21%
Sweden	4,265,675	46%	4,137,951	41%
Total	9,326,484	100%	10,087,903	100%
Amplifiers for telephones				
United States	10,957	91%	17,774	46%
Japan	—	—	12,311	32%
Germany	913	8%	842	2%
Total	11,992	100%	38,360	100%
Tone apparatus for telephones				
United States	147	2%	712	5%
Germany	7,498	98%	4,526	30%
Belgium	—	—	7,401	50%
Italy	—	—	2,269	15%
Total	7,645	100%	14,907	100%

¹ Venezuela is changing its reporting basis for trade statistics. Until June 1973 imports were classified on a weight or materials basis. Starting in June 1973 until October 1974, a more detailed BTN system is available. The last two months of 1974 and the early part of 1975 are on an even more detailed BTN basis. This latest change can be accommodated, but the comparability of pre-June 1973 statistics with later figures cannot be relied upon for accuracy.

² United States share for 1973 is .01% and 1974 share .8%.

Source: Ministry of Development.

Ministry of Communications has stated that it costs the government \$2.50 for every \$1 received for mail delivery. This figure has increased from \$1.70 in 1950 and \$2 in 1970.

The immediate goal of the Ministry is the creation of an Institute for Postal and Telegraph Service. This would create more operational flexibility and allow for greater efficiency. The Ministry also

Table 6.—Production of consumer electronic products, 1971-74

	Unit production				Value of production (in thousands of U.S. dollars)			
	1971	1972	1973	1974	1971	1972	1973	1974
Television sets	122,242	147,580	144,514	126,406	20,561	20,836	21,403	20,567
Radios	123,450	111,976	109,538	7,105	1,958	1,141	767	375
Automatic phonograph players.	1,552	1,778	1,799	2,460	697	424	406	480
Record players	21,607	29,791	42,586	43,177	520	757	1,303	1,749
Radio/record players	34,326	33,403	33,738	38,073	5,240	5,386	6,163	6,810
Radio amplifiers	100	100	125	11,650	12	15	22	1,309
Car radios	47,866	66,385	78,070	84,175	1,578	2,165	2,755	3,204
Amplifiers	9,700	6,566	6,001	7,293	697	424	406	768
TV picture tubes	99,377	118,877	133,356	159,374	3,226	3,852	4,255	3,251
Channel selectors	72,185	96,686	93,202	115,216	748	1,017	1,050	679
Speakers	45,039	130,813	115,193	708,931	777	803	1,072	2,555
Transformers	219,000	372,000	431,000	1,236,042	384	573	666	1,646
Deflection yokes	1,553	15,732	21,780	88,249	6	94	129	582
Flybacks	4,744	12,988	21,213	102,420	20	58	102	463

Source: Ministry of Development.

Table 7.—Annual capacity of domestic electronic apparatus manufacture, 1974

Radio record players	149,500
Radio amplifiers	106,429
Car radios	206,000
Radio receivers	118,000
TV receivers (B&W only)	303,000
Other amplifiers	15,250
Channel selectors	738,000
TV picture tubes	232,000
Flybacks	405,000
Transformers	5,640,000
Deflection yokes	350,000
Speakers	1,311,746

Source: Informacion sobre Renglones del Sector Electrico y Electronico, Min. de Fomento, (see Bibliography).

Table 8.—Volume of mail handled, 1972-74
(in thousands of pieces)

	1972	1973	1974*
Surface	123,393	137,485	148,265
Air	76,592	83,571	81,166
International	122,813	149,460	126,411
Total	322,798	370,516	355,842
Percent of Annual Change	—	+14.8	-3.9

* Estimated. Source: Bureau of Mails.

plans to partially automate the system and bring it up to a semi-mechanized level of operation. This process was begun in 1974 through a request for bids on the partial mechanization of the Caracas Main Post Office.

Further proposed steps in the process include the partial mechanization of another 29 post offices (this is mainly applicable to bag handling and conveyor systems; sorting will still be done by hand in the first stage). In addition, the postal system will begin using demountable public mail boxes with a three-slot pre-sort capability as containers for inter-urban mail. These boxes will be carried on special

vehicles which may be imported or produced in Venezuela by a U.S. automobile producer. The boxes will be built in Venezuela under contract. The Post Office also will begin the use of automatic stamp vending machines.

Later steps planned for the improvement of the system are the development of a national mail code and the use of optical character recognition (OCR) scanners for sorting. This latter step appears to be several years away, however, since there is no investment budgeted for postal service in the Ministry's budget.

There is some use of automatic stamping machines but until the Post Office took over the sale of stamps, there were only seven places in the country where these machines could be calibrated. In July 1975 there were 121 calibration locations. This service will eventually be available in all 850 Post Offices in the country.

With the exception of Pitney Bowes automatic stamping machines, U.S. equipment is considered to be less advanced than that available from Europe, Japan, and Canada. Japanese-designed OCR equipment being manufactured in Canada was mentioned favorably because the readers apply an invisible code on each piece of mail after reading the address, thus eliminating further physical readings at other points in the distribution process. In general, the Post Office seems well aware of the latest developments in postal systems and anxious to move its system to the forefront of modern postal technology.

It appears that good opportunities for sales of equipment to private companies doing volume mailing will develop in the next year. Manufacturers of equipment not presently represented in Venezuela would do well to get established soon in order to

participate fully in the market expected to develop.

Equipment needed:

- Conveyors
- Bag handling and transporting equipment
- Vending machines
- Tying machines
- Automatic stamping machines
- Automatic cancelling machines
- Sorting equipment
- Mail handling systems
- Specialized vehicles
- OCR systems

MARKETING

The government is making an effort to train more qualified technicians in electronics and communica-

tions. Virtually all government purchasing is done through a bidding system based on prior prequalification. The prequalification process includes consideration of the reputation of the company and its products, servicing capability, delivery time, technical suitability of the products, and price. Turnkey package bids are not uncommon.

Given these circumstances, it is desirable to maintain an agent or representative in the country. Particular attention should be paid to providing instructions, manuals, and advertising material in Spanish and to setting up an adequate service organization fully equipped with spare parts. One of the most common complaints about distributors is the length of time required to obtain spare parts.

10 Electric Energy

A high per capita income and broad, comprehensive plans for industrial expansion and rural electrification will insure substantial investments for electric power generation, transmission, and distribution equipment by the Venezuelan Government. Maximum use of Venezuela's extensive hydroelectric potential will be pursued as the country tries to conserve its reserves. Although nuclear power generation is being considered for use in the latter years of this period, there are apparently no definite plans for construction of a nuclear plant at the present time. While the investment of \$3 billion in power generation will be the largest of the three utility market segments, at least \$1 billion will be expended in the power transmission and distribution networks.

Since there is no local production of equipment used for the generation and transmission of heavy power, and because U.S. equipment is highly respected by end users in Venezuela, the opportunities for U.S. suppliers are good. However, competition is stiff.

UTILITIES DOMINATE POWER INDUSTRY

Although the electric energy system in Venezuela is in the hands of public and private regional and local entities, it is essentially dominated by three big organizations, two public and one private.

In the public sector, EDELCA (Electrificacion del Caroni—Electrification of Caroni), owned by CVG (Corporacion Venezolana de Guayana—Venezuelan Corporation for Guayana) is the largest electrical utility in terms of installed capacity. The company is responsible for the operation of the Macagua and Guri hydro plants located on the Caroni River and for the further development of hydroelectric potential on that same river. EDELCA transmits block power to the central and eastern areas of the country where it is distributed and sold by CADAPE (Compania Anomia de

Administracion y Fomento Electrico—Electric Administration and Development Company) and EDC (La Electricidad de Caracas—Electricity of Caracas). EDELCA also directly supplies the large heavy industries in the Guayana region, particularly the national steel company SIDOR (Siderurgica del Orinoco—Orinoco Steelworks) and the CVG-Reynolds aluminum plant, ALCASA. EDELCA also has a small, low-voltage distribution network in Guayana that will probably be shifted to CADAPE.

CADAPE, the other large public enterprise, is under the jurisdiction of the Ministry of Development. It is responsible for bringing electric power to those areas not yet electrified. It is engaged in all three facets of the business: Generation, transmission, and distribution. It currently has to supplement its own production by buying power from private utilities. Future expansions in the country's transmission and distribution networks will be developed under CADAPE's oversight. Most of the new generation construction projects presently being planned, except the EDELCA project on the Caroni River, will be undertaken by CADAPE. Private companies will be able to expand in the areas they are currently serving. Nonetheless, there is some feeling in the industry that all future additions to generation capacity will be controlled by the Government, probably CADAPE; but this decision has not yet been made.

EDC, the largest of the 10 private power companies, is located in and serves the Caracas area. Both La Luz Electrica and La Electricidad de Guarenas y Guatire are stock corporations. The majority shareholder of each is EDC. These two companies share EDC's technical and planning staffs and are arranging for their inventory control and billing transaction to be processed by the EDC computer.

Three of the companies listed in Table 1, electric utilities in Venezuela, are owned by foreign investors. C.A. Energia Electrica de Venezuela, serving the Maracaibo area, and C.A. Energia Electrica

Table 1.—Electric power utilities in Venezuela

Company	Area of service	Activities ¹	Installed Capacity (MW)		Percent of total 1974
			1973	1974	
C.A. La Electricidad de Caracas (EDC)	Caracas, State of Miranda	G/T/D	680	734	16.8
C.A. La Luz Electrica	Caracas, Los Teques	D	—	—	—
C.A. Energia Electrica de Venezuela	Maracaibo & vicinity	G/T/D	422	422	9.7
C.A. Energia Electrica de Barquisimeto	Barquisimeto	G/D	66	66	1.5
C.A. La Electricidad de Ciudad Bolivar	Ciudad Bolivar	D	—	—	—
C.A. Luz y Fuerza Electrica de Puerto Cabello	Puerto Cabello	D	—	—	—
C.A. Planta Electrica de Carora	Carora	G/D	6	6	.1
C.A. La Electricidad de Guarenas y Guatire.. . . .	Guatire, Guarenas	G/D	5	5	.1
C.A. Luz Electrica del Yaracuy	San Felipe	G/D	6	6	.1
C.A. Electricida de Valencia	Valencia	G/D	59	59	1.4
C.A. de Administracion y Fomento Electrico (CADAFE)	National	G/T/D	738	1,185	27.2
Electrificacion del Guayana Caroni (EDELCA)	Guayana	G/T/D	895	1,335	30.7
Self Suppliers	—	—	530 ²	535 ²	12.3
National Totals	—	—	3,407	4,353	100.0

¹ G=Power generation; T=Power transmission; D=Power Distribution.
² Estimated.

de Barquisimeto are owned by Canadian Light, while Electricidad de Ciudad Bolivar is owned by a Dutch firm. Under the terms of the Andean Pact, however, these companies will be required to accede to 80% Venezuelan ownership no later than 1977. The three firms have been negotiating with CADAFE and it is widely believed that they will be absorbed by the Government.

Numerous small towns receive electric power service from state, municipal, or very small private plants. CADAFE is making a concerted effort to bring these isolated systems into the national electric grid. For example, three municipal electrical cooperatives in the State of Anzoategui now purchase power from CADAFE for their own distribution. No reliable estimates of the installed capacity of these small suppliers are available, but they contribute a declining share of total generated power. CADAFE's broader and improved service has increasingly reduced the need for such installations, and industry sources feel they will disappear altogether by the 1980s.

Several other organizations have influence on electric utilities. COPLANEL (Comision del Plan Electrica Nacional—Commission for a National Electrification Plan) is part of CORDIPLAN (Oficina Central de Coordinacion y Planificacion—Office of Coordination and Planning) in the Office of the Presidency. The Commission is composed of representatives from CORDIPLAN, the Ministry of Development, EDELCA, CADAFE, CAVEINEL (Camera Venezolana de la Industria Electrica—Association of Electric Utilities), AVIEM (Asociacion Venezolana de Ingenieros Electricas y Mecanicos—Venezuelan Association of Electric and Mechanical Engineers) and CTV (Confederacion de Trabajadores de Venezuela—Confederation of Venezuelan Laborers Union). CADAFE pro-

vides the secretariat. COPLANEL helps coordinate the development of the industry by integrating the planning activities of the various entities into the national plan.

OP SIS (Oficina de Operaciones de Sistemas Interconectados—Office for Interconnected Systems Operations) is a company jointly owned by EDELCA, CADAFE, and EDC. Formed in 1968, its original purpose was to provide an institutional framework for resolving technical and administrative matters resulting from the interconnection of the EDELCA, CADAFE and EDC grids and the interchange of power. The electrical grids of the big three as well as some of the smaller entities are now coordinated by OPSIS, which operates a computer controlled load dispatch center located in Caracas.

Since there is no single legal authority responsible for the regulation of the electrical power sector, EDELCA and CADAFE voluntarily try to harmonize their policies, operations and development plans with the private companies through CAVEINEL. Coordination is also attempted through COPLANEL and OPSIS. This arrangement has not been entirely satisfactory, however, and both CAVEINEL and AVIEM have proposed comprehensive legislation regulating the sector. Such legislation is being prepared for presentation to Congress.

The President of Venezuela announced in his March 1975 State of the Nation address that reorganization of the electric energy sector is being studied. Although CADAFE will almost certainly absorb the foreign-owned companies, it is unlikely to absorb EDC nor any of the other private Venezuelan-owned companies. Instead, the reorganization is more likely to take the form of a consolidation of the technical and planning staff of

CADAFE and EDELCA in addition to the purchase of the foreign-owned firms. CADAFE, however, is the only company in the industry free to expand its area of operations, i.e., to operate on a national scale. Future interconnections of isolated systems serving small communities will undoubtedly bring them under CADAFE's operational responsibility.

There are only two major electrical distributor systems in Venezuela at present, the Guayana-Central System, a relatively large isolated grid, and the Western System. There are, in addition, numerous small, "local" grids. The Guayana-Central system, the closest to a national system, receives its power supplies from EDELCA, CADAFE, and EDC. This system, also referred to as the interconnected system, primarily serves the Guayana region and the Eastern and Central parts of the country, including Caracas and Barquisimeto.

The Western System is smaller and unintegrated. It includes the isolated Maracaibo grid and the El Tablazo, Las Morochas, and La Fria plants which are interconnected. Although the Western and the Guayana-Central systems are linked, the capacity for power interchange is limited because there is only one single 115 kV line. The installed capacity of the Western System is considered ample but it is insufficient to serve as backup for the Guayana-Central system. When the Maracaibo grid is linked to the other distribution system the railroad grid will be complete around 1985.

DEMAND FOR POWER GROWING

Nationwide, the demand for electric power is expected to increase 12% annually through 1980, (a slightly lower rate of growth rate is expected from 1980 until 1990.) There are several factors underlying this rapid growth. During the 1973-85 period, Venezuela's population is expected to increase 3.4% annually. The systematic electrification of the country will add to the areas served, creating new power consumers. As CADAFE's program of rural electrification proceeds, and as its service improves, fewer industrial establishments will want to invest in their own generation facilities.

The country's projected industrial growth will be responsible for the biggest single boost of power consumption in the country. As shown in other sectors of this Survey, there are important expansions planned for almost every major industrial sector in Venezuela. Two in particular are worthy of notice: the planned tripling of SIDOR's capacity, based on electric arc furnaces, and the large expansion of ALCASA's operations. They alone will require an additional 1,000 MW by 1978.

Industrial consumption accounted for 62.2% of the 1973 total. It is expected to rise to 70% of the

total in 1985. Actual total consumption jumped from 8,439 MW in 1970 to over 10,000 MWA in 1972 and to 13,200 MWh in 1974.

The greatest growth will be in the Guayana-Central System. This system serves the steel and aluminum industries, which are the industrial development projects having the largest power requirements. In addition, the Government has passed a law requiring industry to relocate away from the Caracas area to relieve overcrowding there. These relocations, and the population shifts that accompany them, are likely to result in a higher concentration of both industry and population in the Central area. So while the country as a whole will have a 12% annual growth rate, demand in the Central area is expected to grow 14% per year. EDC predicts that demand in the Caracas area will grow 9.4% per year from 1975 to 1980, drop to 8.4% from 1980 to 1985 and drop again to an 8% rate in the 1985-90 period.

In the Western area, anticipated growth of the petrochemical industry will also boost the power demand about 14% annually.

HYDROELECTRIC POWER PREFERRED

The Government is understandably anxious to conserve its reserves of petroleum and natural gas while there remains any significant amount of unexploited hydroelectric potential in the country. Thus, the emphasis will be on using hydroelectric resources to the greatest extent possible to meet the growing demand for power. As can be seen in Table 2, two-thirds of all proposed construction projects will be hydroelectric. In 1973, 27.5% of installed capacity was hydroelectric while 58.9% was thermal and 13.6% was diesel. However, by 1990 it is expected that around 75% of all installed capacity will be hydroelectric and that the rest will be based on thermal generation.

Nuclear generation is being studied, but there are currently no definite plans for the construction of a nuclear plant. Given the normal gestation period for nuclear plants, none is likely to be completed before 1988.

GENERATION PROJECTS

Purchases of electrical power equipment will be concentrated primarily in the Big Three companies and the Maracaibo system over the next 5 years. Planned investments are substantial. EDELCA will spend around \$2.33 billion on the final stage of Guri Dam, while CADAFE plans to invest a total of \$880 million in new capacity between 1975-1979. EDC will spend approximately \$160 million for equipment alone, during the 1975-79 period.

Table 2.—Major projected additions to installed electric generating capacity

Projects	Size (in MW)	Projected date of completion
El Tablazo	300	1979
Centro 1	400	1978
Centro 2	400	1978
Centro 3	400	1979
Centro 4	400	1979
Rio Uribante	1	1
Rio Caura	1	1
Guanta	1	1
Tacoa 7	400	1979
Tacoa 8	400	1979
Tacoa 9	400	1980 ²
Puerto La Cruz 1 & 2	800	1984 ²
Puerto La Cruz 3 & 4	800	1990 ²
Guri 7 & 8	1,200	1976
Guri 9 & 10	1,200	1977
Guri 11	600	1980
Guri 12	600	1981
Guri 13	600	1982
Guri 14	600	1983
Guri 15 & 16	1,200	1984
Guri 17	600	1985
Guri 18	600	1986
Guri 19 & 20	1,200	1987
Tacoma Dam	1,080	1990 ²
Caruachi Dam	1,760	1990 ²
Macagua II	9,450	1995 ²
ENELVEN	80	1978

¹ Under study.

² Tentative.

Source: U.S. Department of Commerce Survey Team from information provided by respective firms.

ENELVEN (C.A. Energia Electrica de Venezuela—Electric Energy Company of Venezuela), in the Maracaibo area, will invest around \$75 million for generating and distribution facilities during the same period. These figures indicate that there will be a substantial market for electric power equipment over the next 5 years. However, much of the equipment will be ordered in the very near future.

A status report on all known projects is given below.

Raul Leoni (Guri) Dam

The biggest project currently underway is the construction of the Raul Leoni Dam, commonly known as the Guri Dam. It is located on the Caroni River and will be completed in two stages. The first stage is scheduled for completion in 1977. It involves 10 units with a combined capacity of 2,065 MW. The second stage is to be finished by 1988. It will include a second dam, a second machinery house with 10 generating units, each rated at 600 MW, and the construction of two large marginal dikes. At its final height the dam will be 270 meters high and capable of producing nearly 9 GW of power. (See Table 3 for more details.)

Table 3.—Summary description of Guri Dam Project

Reservoir	
Drainage area	85,000 Km ²
Minimum elevation for operation	240 m
Maximum normal elevation	270 m
Maximum elevation of overload	271.2 m
Surface area at normal level	4,250 Km ²
Normal maximum volume	139,000×16 86 9m 83.9
Normal minimum volume	50,000×10 86 9m ³
Useful capacity	89,000×10 86 9m ³
Concrete Dam	
Type	Gravity
Elevations of road grade	272 m
Total excavation for new dams	347,000 m ³
Concrete for new dams	5,200,000 m ³
Width of dam crest	16.25 m
Spillway capacity, normal level	27,200 m ³ /s
Concrete for spillway	670,000 m ³
Auxiliary dams of fill and rock	
Length	6,070 m
Maximum height	140 m
Width of crest	11.20 m
Fill	40,000,000 m ³
Marginal-Dikes	
Length of crest right side	26
Length of crest left side	6,000 m
Maximum height right side	8,050 m
Maximum height left side	73 m
Fill right side	53 m
Fill left side	5,300,000 m ³
Fill left side	11,800,000 m ³
Turbines	
Type	Francis
Nominal efficiency	804,000 hp
Net fall	130 m
Diameter of discharge of rotor	
Speed	7 m
Speed	112.5 r/min
Generators	
Nominal capacity	630,000 kVA
Phases	3
Frequency	60 hertz
Voltage	15.6 kV
Transformers	
Nominal capacity	630,000 kVA
Phases	3
Voltages	15.6/400 kV

Source: Electrificación del Caroni, Caracas.

The engineering for the project is being done by Harza Engineering Company (a U.S. firm) for EDELCA, which has the responsibility for the construction and operation of the dam. Guri currently has six units in service with the remaining four units of the first stage on order. The 10 generators in the first stage were supplied by Westinghouse, Toshiba, and Canadian General Electric; virtually all of the rest of the first stage equipment came from European firms, primarily because U.S. suppliers were not price competitive. Bids have already

been requested on the water turbines for units 11 to 20 and much of the other equipment for the second stage.

The cost of the second stage was originally estimated to be over \$1.6 billion at 1975 prices (a 6% annual price escalation was taken into account in this estimate). However, EDELCA's estimates have been revised upwards to a tentative \$2.3 billion, to be invested over the 1975-78 period. The following list shows the major contracts to be let:

1. Bridge over the discharge channel and accessways
2. Enlargement of the existing dam spillways
3. Construction of the extension of the principal dam and the second machinery house
4. Right auxiliary dam
5. Left auxiliary dam
6. Distribution patio
7. Right marginal dikes
8. Left marginal dikes
9. Installed equipment for 10 generator, turbine, and auxiliary units

No contracts were to be signed until the end of 1975. Contracts 2-5 and 6-8 may be concluded as two separate package deals. Contract 9 includes all equipment to be installed, but this does not imply that it will necessarily all come from a single source.

The first stage of Guri Dam will not provide sufficient power to cover the country's needs with adequate reserves during the 1975-80 period because of the unusually high demand growth expected in the Central area. This has made necessary the addition of around 2,000 MW of capacity to cover a potential shortage sometime during 1977-1980. (EDELCA, by the way, has warned that unit 11 may not become operational until the end of 1980 instead of the middle of 1979.) The additional power capacity will be supplied by steam turbines to be produced by CADAPE and EDC in the Central area.

Centro-Thermo Plant, Moron

Siemens A.G. is building the new CADAPE plant (referred to as the Centro-Thermo plant) on a turnkey basis. There were no American bidders on the project, not only because of CADAPE's firm price policy, but also because the exact site was not known when bids were requested. The plant will include four units of approximately 400 MW each. Units 1 and 2 are projected to come on line sometime in 1978. The project is expected to cost roughly \$186 million, of which around \$116.2 million will be the foreign exchange cost. The last two units are supposed to start up in 1979.

Arrecifes-Tacoa

EDC will enlarge its Arrecifes-Tacoa plant by adding two units of 400 MW each. Work on the Tacoa plant began in 1975 with the first unit to go on line July 1978. The design work was done by Inelectra, a Venezuelan firm. The steam turbines will be supplied by Toshiba. Total equipment costs are estimated at \$160 million. EDC is still considering increasing capacity at its Puerto La Cruz plant; but since the Tacoa expansion will be larger than originally envisioned, additional generating capacity at Puerto La Cruz is not considered necessary in the short run (5 years). The form and timing of this project is thus an open question.

Following are other generation projects now under study:

—The Tacoma Dam, on the Caroni River below Guri, will consist of 12 90 MW units. Harza Engineering has submitted a preliminary feasibility report to EDELCA on this project. If approved, work would begin around 1985 with power generation beginning around 1991.

—The Caruachi Dam, below the Tacoma Dam on Caroni, would have 11 160 MW units (1,760 MW total). This project is also being studied by Harza for EDELCA, which has not yet decided whether to build both the Tacoma and Caruachi Dams. Another alternative being considered is to build a much larger dam at Caruachi, thus eliminating the need for the dam at Tacoa. (It is estimated that after Guri is constructed there would still be 4,000 MW of hydroelectric potential in the Caroni river.)

—Macagua II would have a capacity of 945 MW derived from six 257.5-MW units. This project would not be undertaken until the Tacoma and/or Caruachi Dams are built. It would be located at the site of the present Macagua Dam.

—In the Western System, C.A. Energia Electrica de Venezuela is planning a capacity expansion of 80 MW of thermal power to go on line in 1978. The company requested bids on two steam turbines in June 1975.

—The El Tablazo plant will be expanded by the addition of three 100 MW steam turbine units. The project, being managed by CADAPE, is supposed to be on line in 1979. Inelectra designed the original plant.

—The Rio Uribante hydroelectric project will consist of four dams and three machinery houses under CADAPE management. Installed capacity will be between 850-900 MW, with the first units to be on line in 1982 and the final installations in 1985. Present plans call

for the installation of two 200 MW units and perhaps three units of 150 MW each. No decision had been reached by June 1975 as to whether the project would be turnkey or not. Preliminary studies of the project were carried out by Consorcios y Obras Electricas and by Proyecto Tams. Both firms were interested in the engineering contract. Roads to the site were completed in 1974, and actual construction of the facility should start in 1976. This project is expected to satisfy the needs of the Western System for the next decade.

—The Rio Caura Dam was originally conceived as a two-stage project with the first stage simply creating a reservoir for agricultural, industrial and other uses. The second stage, however, would include generating capacity of 3,000 MW. A feasibility study was begun in 1975, but as of June 1975 no site had been selected. The project may not be carried forward until after the Caruachi and/or Tacoma Dams are built.

CADAFE's Rural Generation Plan will extend electric service to very small, isolated towns. It has a \$125 million budget for the 1975–80 period. Equipment requirements will include 100 300-kV diesel generating units and, to much lesser extent, small hydraulic units. The towns to be served are in the very southern portions of the country and on certain small islands in the Caribbean.

TRANSMISSION AND DISTRIBUTION

EDELCA will invest some \$697.7 million in transmission systems from 1975 through 1988. (This is a preliminary figure based on a recomputation of the rate of inflation as suggested by the World Bank.) The major installations to be built during the period 1974–1979 include Guayana Substation "B" with five 400/115-kV autotransformers of 700 MW, the installation of three 400 kV lines from Guri to Substation "B," and the already completed second 400 kV line from Guri to Caracas. During the 1980–89 period EDELCA expects to increase its transmission capacity to 6,000 MW between Guayana and the Central region. The favored plan seems to be two 765-kV circuits by 1988 and a third circuit in the 1989–94 period. The Swedish firm, Asea, however, has suggested DC for this transmission. This proposal and others are presently under study. In 1988 the Guayana "B" substation will be enlarged through the addition of four 400/115/20-kV transformers of 700 mVA each and the necessary synchronous condensers. A fourth 400 kV line between Guri and Guayana "B" will also be constructed.

CADAFE states that its planned investment in transmission during the 1975–79 period will be approximately \$200 million. This figure can be considered low due to recent equipment price increases. According to the Statistical Annex of the 1974 *Memoria* of the Ministry of Development, CADAFE spent \$15 million on transmissions during 1974. The same source indicates CADAFE's goals for 1975: A total of \$35.4 million was to be spent on new works in 1975 and \$54.5 million on transmission works already in progress at the beginning of that year. The submarine cable to Margarita Island, expected to be completed by 1976, will cost approximately \$7 million. Thus, about \$100 million will be spent on transmission in the 1976–79 period, or roughly \$25 million a year.

The company's planned investment in the 1975–79 period also includes \$230 million for distribution and subtransmission works. The most important element of this program is the Rural Electrification Program at a total cost of \$137 million during the same period. Transmission facilities included in the Program are estimated at \$96 million. Other works and the completion of existing projects in 1975 amounts to \$92 million.

RURAL ELECTRIFICATION

The Rural Electrification Program is jointly financed by individual states and CADAFE. Until 1974, CADAFE was paying for the program, but a law passed in that year requires the states to pay 50% of the cost. The Program objectives are the electrification of small population centers in rural areas and the electrification of very low-income urban areas, particularly the "ranchito" zones in the hills surrounding Caracas. In 1975 approximately Bs. 175 million (\$41 million) will be spent on the program; Bs. 85 million (\$20 million) for the rural areas, and Bs. 90 million (\$21 million) for the marginal areas.

The program is planned in three stages with the first stage ending in 1976. The second stage runs from 1977 to 1980, and the third from 1981 to 1984. Beginning in 1976 there will be a change in emphasis in the rural sector of the program. Rather than trying to electrify only population centers in the country, an effort will be made to bring power directly to farms and ranches. The chief purpose of the program is to encourage people to remain on the farm and to increase agricultural productivity. The program is nationwide in its impact, but the areas in which most activity is likely to center are the Central, Western, and Southern regions where agricultural productivity is most heavily concentrated.

Projected investment for the Program is indicated in table 4. The electrification of the country-

Table 4.—Projected expenditures under the rural electrification program 1975-84

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Millions of U.S. \$	41.0	28.7	28.0	21.0	18.7	16.3	21.0	23.1	25.4	28.0
Number of people Benefitted (000s)	278	299	303							854

Table 5.—C.A. La Electricidad de Caracas's investment summary: Transmission and distribution, 1975-1980¹
(in thousands of Bolívares)

Item description	1975	1976	1977	1978	1979	1980	Cumulated 1975-80
Transmission & subtransmission lines 69 kV, 230 kV and 30 kV	2,850	400	5,900	15,000	7,000	400	31,450
Transmission cables & subtransmission 69 kV and 30 kV	24,050	26,920	11,600	10,400	5,000	4,750	82,720
Patios and major substations	15,700	14,300	11,700	12,300	11,250	2,050	67,300
Small substations	25,630	14,950	28,990	8,750	7,500	6,250	92,070
Distribution	86,639	94,783	103,692	113,440	124,104	135,768	658,426
Total	154,869	151,353	161,882	159,890	154,854	149,218	932,066

Note: Calculated at 1974 prices which do not include financing charges; Bs. 1=U.S. \$0.23.

Source: Plan de Expansión del Sistema a Mediano y Largo Plazo. C.A. La Electricidad de Caracas, Caracas.

side is expected to be substantially complete by 1985. About 60% of the Program funds will be spent on equipment and materials and 40% on labor, based on current expenditures. This relationship may change, however, as wages rise throughout the country. Equipment needs foreseen for the Program are shown below.

	1975	1976	1977	1978-82
Transformer capacity (000 kVA)	135	175.5	211.5	556
Poles (000s)	39	42	43	104
Km of Cable (34.5 and 13.8 kV)	2,031	2,225	2,297	4,969

All transformers, cables, and poles will be supplied from local sources. Imported items include insulators (Japan and Brazil) and circuit protection equipment provided by McGraw-Edison. G.E., and Westinghouse. CADAFE contracts all of the construction work required for the program. With only minor exceptions all equipment is purchased on an open bid basis.

EDC will continue to develop the areas it serves with expected investments of approximately \$153 million in the 1975-80 period. This figure does not represent a true estimate of EDC's potential as a buyer, however, because of the significant amount of advance orders it placed in 1974 to avoid inflationary price increases and long delivery lead times, particularly for transformers. The true figure for EDC's additional investment in distribution would be closer to \$87 million, reflecting planned investments in the 1978-80 period. Details of planned expenditures for distribution equipment during 1975-1980 are provided in Table 5. Investments in

Table 6.—C.A. La Electricidad de Caracas' investments in distribution¹ 1981-90
(in thousands of Bolívares)²

Year	Expenditure
1981	147,173
1982	159,535
1983	172,936
1984	187,463
1985	203,209
1986	220,279
1987	238,782
1988	258,840
1989	280,583
1990	304,152
Cumulated 1981-90	2,172,952

¹ Represents expenditures by La Electricidad de Caracas and its subsidiaries, CALEV and ELEGUA.

² Expenditures were calculated at 1974 prices.

Source: Plan de Expansión del Sistema a Mediano y Largo Plazo, C.A. La Electricidad de Caracas, Caracas.

distribution equipment in the 1981-90 period, which are in excess of \$500 million, are detailed in table 6. This investment is to meet a demand for power projected to grow at an 8.4% annual rate from 1981 to 1985 and 8% from 1986 to 1990.

ENGINEERING CONTRACTING

There are about a dozen firms in Venezuela with 20 or more employees doing electrical engineering work. A larger number of small companies also do consulting work in the electrical energy field and a number of foreign engineering firms have representative offices in the country. Only one of the latter actually does design work in Venezuela. Under the terms of the Andean Pact Agreement,

all design engineering firms are required to reduce their foreign participation to no more than 20% by 1977. Venezuelan engineering firms are capable of carrying out all phases of generation, transmission and distribution design; but almost all of them associate from time to time with foreign firms for the execution of specific projects. The choice of a foreign firm is based primarily on its reputation and the technology transfer that is expected to result from the association. In some cases these considerations may be more important than offering the lowest price.

To encourage the growth of local engineering companies the Venezuelan Government requires that all foreign engineering firms doing work for the government associate with a Venezuelan firm as a condition for getting the contract. In addition, when a Venezuelan firm contracts with a foreign consulting firm on their own project, the fee paid cannot be deducted from Venezuelan taxes as a business expense.

Of the three largest producers, EDELCA has the greatest tendency to use the turnkey approach. It has worked along this line with foreign engineering firms, particularly with Harza Engineering which is doing the design work for Guri. CADAPE also uses turnkey projects, but it does have a technical staff it uses for some unusually small projects. EDC, on the other hand, relies more on its own design work.

Inelectra, one of the largest engineering firms in the electrical field with about 70 employees, designed the El Tablazo plant and has done a number of other studies for CADAPE and EDC. The firm is anticipating doubling of its business in the next 1 to 2 years. At least three or four other firms expect similar growth.

None of the design engineering firms in Venezuela participates in the financing of equipment purchases for projects they are working on, although they do provide purchasing services.

MARKETING TO THE SECTOR

There is no production of heavy power generation or transmission equipment in Venezuela. Trade sources do not feel that manufacturing of these items will be economically feasible in the foreseeable future, given the small size of the market. Even the prospect of a wider, protected market consisting of all the Andean Pact countries is not considered sufficient to spark the creation of a domestic producer industry.

Venezuela does manufacture distribution equipment. For example, a sizeable proportion of its low-voltage distribution equipment is now produced locally. Other items made in Venezuela include

cable; distribution transformers; low-voltage switchgear, lighting systems and assemblies; and medium-voltage transformers, switchgear and circuit protective devices (see table 7 for a list of local equipment manufacturers). Westinghouse, perhaps the single most important supplier in the field, produces lighting equipment, switchgear and transformers in Venezuela. In fact, the biggest transformer manufactured in the country is a 6,000 kVA unit produced by Westinghouse.

Marketing to the sector generally requires an agent or representative in the country. The more important foreign suppliers such as Westinghouse, General Electric, Siemens and Brown Bovari all have manufacturing or sales companies in Venezuela. Close and frequent contact with the major buyers is essential, since the use of open international bidding procedures is declining. Each of the major buying companies maintains lists of qualified suppliers, and increasingly, bids are invited from only these suppliers. In fact, EDELCA has

Table 7.—*Estimated value of local production of distribution equipment*
(in thousands of U.S. dollars)

				Local manu- facturers	Share of market (percent)
Distribution transformers ..	4,200	6,000	Caivet		30
			Mevenca		30
			Westinghouse		20
			Teca		20
Low voltage switchgear	2,000	3,000	Complex		10
			Panelmaster		10
			Desitec		25
			Circulo		30
			Ezata		25
Medium voltage switchgear	3,500	5,000	Siemens		20
			Westinghouse		30
			BBC		20
			Gedisa		20
Medium transformers ..	1,000	3,000	Caivet		40
			Mavenca		10
			Westinghouse		35
Distribution protective equipment	50	700	Westinghouse		30
			Panelmaster		30
Circuit protection devices	2,300	6,600	Westinghouse		80
			Zinsco		5
Specialty transformers ..	50	850	Westinghouse		60
Lighting Systems.	2,300	3,300	Philips		35
			Westinghouse		35
			Pineda		15
			Ilvert		15

Source: Trade estimates tabulated by U.S. Department of Commerce Survey Team.

formed a committee of nine individuals from government, private banking, and the financial and construction fields to advise it on, among other things, selection of companies which will be invited to bid on the contracts for the second stage of the Guri project. The committee also will participate in the decision to award the bid. It is important to note, however, that any company may ask to be included in the qualification process and, if qualified, may be invited to bid. Thus, the first step for U.S. companies hoping to penetrate the market is to get a good representative who can present the firm's products, experience, and reputation in the best possible light. The qualification process relates to what will be bid on; in other words, a firm may have to qualify as a supplier for a whole substation instead of just the transformers. Lead time for qualification is usually about 6 months.

Competition for the market is stiff. There were nine bidders on the Tocoa project of EDC, the

lowest three being Japanese firms. While each of the major utilities is concerned about the quality, delivery time and price of equipment, trade sources agree that price seems to be relatively important to Government companies. Bids for turnkey projects are not uncommon, even for projects such as substations. Suppliers anxious to get a slice of the business would be well advised to consider bidding on turnkey jobs.

Most Venezuelan engineers in the electric power field read English, and there is general familiarity with U.S. trade magazines. Important trade exhibitions in the industry are those associated with CADAFE's triannual technical conferences on distribution and transmission and AVIEM's conferences. The latest of these, on distribution, was held in May 1975 and had around 25 exhibitors. Costs are high, but local suppliers find participation in these exhibitions useful as a means of gaining and maintaining a market position.

11 Construction

The construction industry has grown dynamically during the 1970's. Investment in new building advanced an average 18% annually between 1974 and 1976. It is projected to rise by almost 14% a year through 1980 (see table 1). The bulk of activity is centered around housing. It accounts for about 45% of expenditures. Most of the demand for new housing and improvements in existing dwellings comes from the private sector. It is expected to climb along with personal income. Venezuela's population, one of the fastest rising in the world, has already outgrown the available housing and created new requirements for all public infrastructure. The largest single project now underway is construction of the Caracas subway. The construction industry is also anticipating increased demands from the expanding industries, particularly steel and petrochemicals.

The public sector accounts for almost 50% of Venezuelan construction. It is very sensitive to the political priorities of the Government in power. Construction activities have traditionally ebbed and flowed within each administration's term of office, peaking in an election year and falling off sharply the following year—especially when the successor Government was of a different political party. In 1973, an election year, public housing, highway, water supply, and sewer system construction reached an all-time high. In 1974 construction in these areas declined.

Construction activity began to improve in 1975, but the Perez Government's decision to plan the country's development very carefully and according to new priorities somewhat delayed full recovery. However, construction is expected to reach unprecedented levels, \$2.5 billion over the next 5 years in public works alone, according to some estimates. This will strain local sources of materials and manpower and lead to an impressive growth in demand for imported building materials and equipment.

The 1976 market for imported building products and construction equipment is expected to surpass \$360 million. Within 4 years, annual consumption

of these goods is forecast to nearly double (see table 2). The largest projected import markets for 1980 are construction equipment; plumbing, heating, and pipe products; air conditioning equipment; and materials handling equipment.

U.S. manufacturers have been supplying about 55% of the imported building materials and 65% of the construction equipment market. They can look forward to maintaining their position at least through 1980. Venezuelan consumers have demonstrated a decided preference for U.S. products. They are generally held in higher esteem than those from other countries. The continuing rise in labor costs is increasing demand for materials and equipment that are less labor-intensive. This trend will also benefit U.S. suppliers.

PLANNED CONSTRUCTION

Government Objectives

A high-level national council for the physical infrastructure of the country (Consejo Nacional para el Equipamiento Físico del Territorio), reporting directly to the President, was established in 1975. The end product of this major coordinating body was the Fifth National Plan. The Council brought together the heads of various government entities and semiautonomous agencies to enable them to determine the effect of our plan upon another. One example would be to determine how a railroad built in a particular location would complement the already existing road system. Planning for the construction area was carried out primarily by the Ministerio de Obras Públicas (MOP—Ministry of Public Works).

The Venezuelan Government intends to use public works construction, as well as government incentives to private construction activity, to eliminate imbalance in

- Geographical development
- Intersectoral growth
- The distribution of income.

Table 1.—New construction
(in millions of U.S. dollars)

	1972	1973	1974	1976	1980
Private construction					
Buildings					
Residential					
One-unit	141.3	149.3	236.2	340	600
Multi-unit	569.4	687.0	722.4	1,040	1,860
Total	710.7	836.3	958.6	1,380	2,460
Nonresidential					
Commercial	63.3	69.5	67.2	87	139
Industrial	35.8	30.0	48.3	62	107
Religious .....	.5	.2	—	2	5
Educational	3.3	3.1	3.8	4	6
Hospital and institutional	2.8	3.2	5.6	7	12
Miscellaneous nonresidential	25.6	31.2	44.9	154	220
Total	131.3	137.2	169.8	316	489
Farm (other than residential)	22.8	25.6	23.4	30	49
Public utilities					
Telephone and telegraph .....	.8	2.1	3.2	5	7
Railroad	—	—	—	5	8
Electric light & power	1.6	4.2	6.8	8	12
Gas	2.2	4.3	6.7	8	11
Petroleum pipelines	287.4	250.7	329.5	—	—
Total	292.0	261.3	346.2	26	38
All other private construction	125.2	156.6	138.0	211	340
Total private	1,282.0	1,417.0	1,636.0	1,963	3,376
Public construction					
Buildings					
Residential					
One-unit	72.7	118.1	110.8	177	292
Multi-unit	100.5	155.2	146.4	219	446
Total	173.2	273.3	257.2	396	738
Industrial	256.0	239.1	340.0	441	715
Educational	47.2	46.0	68.8	93	154
Hospital	15.3	23.3	23.3	30	49
Highways, roads, and streets	197.6	255.3	215.6	270	395
Sewer systems	89.3	107.4	84.4	116	180
Water supply facilities	52.6	82.3	78.6	101	164
Miscellaneous public construction	129.7	183.0	190.0	670 ¹	998 ¹
Total public	961.0	1,210.0	1,258.0	2,117	3,393
Total public and private	2,243.0	2,627.0	2,894.0	4,080	6,769

¹ Includes petroleum.

Source: *The Market for Building Materials and Construction Equipment—Venezuela, 1976*, a Bureau of International Commerce, Office of International Marketing research study.

To balance geographical development, population and industry are to be shifted away from the Caracas metropolitan area where they are now concentrated. Investment in infrastructure in the less-developed parts of the country will be given greater priority to encourage area growth. Closer proximity to raw material sources and lower real estate costs will provide additional incentives to industry to relocate.

The Government hopes to redress the imbalance of the last few decades that led to the neglect of agriculture in favor of petroleum and other industries. A high priority will be given to such activities as land clearing, irrigation, drainage, and the provision of adequate rural roads.

The third objective, more even distribution of income, is to a considerable extent a product of the other two goals. It also includes greater attention to low-cost housing and other infrastructure im-

provements that will benefit both the rural and urban poor.

Among recent or pending legislation designed to meet the above objectives are the following:

- Decree No. 506 of October 30, 1974, which created a new policy providing infrastructure improvements in small villages and towns (population centers with between 1,000 and 15,000 inhabitants).
- Decree No. 168 of June 11, 1974, which set up a commission to prepare a national housing program. The commission will set criteria for landholding and use, resolve construction and financing problems relating to housing, and develop a systematic policy of land acquisition by the State.
- Decrees No. 346 and 347 of August 20, 1974, which provide fiscal and other incentives to

**Table 2.—Imports of building products and equipment and U.S. share, 1972-74
and projected 1976 and 1980**

(in thousands of U.S. dollars)

	1972	1973	1974 ¹	1976	1980
Stone, clay, cement, concrete, and gypsum products					
Total imports	969	1,389	2,006	2,608	7,030
Imports from U.S.	95	278	252	368	990
Wood and plywood					
Total imports	2,071	1,682	1,901	2,000	2,431
Imports from U.S.	412	354	302	380	460
Miscellaneous products					
Total imports	8,207	11,151	19,545	25,848	45,209
Imports from U.S.	3,029	4,366	8,724	10,400	18,190
Fabricated structural metal products					
Total imports	9,318	10,360	2,244	5,000	6,080
Imports from U.S.	2,016	4,664	692	1,625	1,975
Builders hardware					
Total imports	10,126	9,560	15,112	20,000	34,980
Imports from U.S.	3,358	2,546	4,221	5,850	10,225
Plumbing, heating, and pipe products					
Total imports	25,947	25,764	106,668	60,000	87,845
Imports from U.S.	15,081	15,185	65,386	35,660	52,210
Air conditioning equipment					
Total imports	7,433	12,581	19,571	30,000	62,208
Imports from U.S.	5,419	10,616	17,244	24,540	50,880
Electric lighting fixtures and supplies					
Total imports	12,101	7,895	4,390	4,840	5,885
Imports from U.S.	6,252	3,510	1,191	1,990	2,420
Carpets and floor coverings					
Total imports	2,376	1,310	1,428	1,575	1,915
Imports from U.S.	281	219	312	265	322
Handtools, unpowered					
Total imports	12,450	11,409	13,155	14,500	17,600
Imports from U.S.	4,618	5,306	7,309	6,730	8,170
Power tools, portable					
Total imports	5,168	5,390	7,657	11,025	22,860
Imports from U.S.	3,484	3,622	5,264	7,475	15,500
Construction equipment					
Total imports	49,727	63,473	97,875	153,000	374,000
Imports from U.S.	34,420	51,371	75,985	116,140	283,900
Materials handling equipment					
Total imports	30,032	28,987	26,744	32,360	47,380
Imports from U.S.	11,848	8,984	9,725	10,030	14,690
Total, all products					
Total imports	175,930	190,956	318,756	362,756	715,423
Imports from U.S.	90,313	111,021	196,607	221,453	459,932

¹ Customs classifications underwent a change in November, 1974. In order to provide continuity for the year 1974, the data for the months of November and December are grouped in the categories in use prior to that time.

Source: *Estadísticas del Comercio Exterior de Venezuela—Importación: Artículo y País, 1972, 1973, and 1974*. Dirección General de Estadísticas y Censos Nacionales, Ministerio de Fomento, Caracas.

private firms to build low-cost housing and schoolhouses.

- Draft Water Resources Law, which would provide for a more democratic distribution system for this relatively scarce resource.
- Draft Law for Urban Coordination, which provides for integrated planning of transportation, housing, schools, and recreation facilities in urban areas.
- Draft Law for Road and Other Transportation, which proposes to reorganize the planning process, currently involving many diverse organizations, public and private, for construction of roads and other transportation facilities.

Also very important to the efficient carrying out of MOP activities are:

- The recent creation of a *Fiscalía General de Mantenimiento*, whose functions are the formulation of a conservation and maintenance policy for public works as well as the setting up of an inspection system.
- The greater use of public solicitations and calls for bids in contracting public works, which reduces the possibility of influence peddling.

FUNDACONSTRUCCION

In an effort to get an informational grip on Venezuela's extremely diverse construction field, a

unique institution was recently created—*Funda-construccion*. This organization is a mixed public/private entity sponsored and supervised by the MOP, the Venezuelan Chamber of Construction, the Venezuelan College of Engineers, the *Banco Nacional de Ahorro y Prestamo* (National Savings and Loan Bank), and others.

Fundaconstruccion is charged with compiling, evaluating, and disseminating information on many aspects of the Venezuelan construction industry. These include the housing market and the supply of commercial and office buildings in different parts of the country. It also maintains a permanent register of members of the entire construction industry. This includes construction firms and contractors, as well as government agencies and semiautonomous entities dealing in one way or another with construction. Of particular interest to U.S. suppliers of construction equipment is a survey begun in late 1975 of equipment needs and current stock by type and geographical location.

A complete list of services performed and publications sold by Fundaconstruccion is available from their office at Prolongacion Los Manos, Quinta Annabella, La Florida, Apartado Postal 51641, Caracas 105. Tel.: 74.84.43 or 74.41.37.

HOUSING

Venezuela is suffering from a serious housing shortage, especially in cities with more than 15,000 inhabitants. Caracas alone holds a quarter of the nation's population. Nearly half of its inhabitants live in improvised hilltop dwellings called ranchitos. The overcrowding in Caracas has changed the character of much of the city. Zoning ordinances have often been flouted, leaving a hodgepodge of commercial, industrial, and residential buildings in many areas.

The primary reason for the insufficiency of urban housing is the flight from the countryside. This first developed many years ago when export agriculture ceased to be an important element of the economy. The Perez Government is attempting to reduce this

flow by improving conditions in rural areas through a vast agricultural development program. In the cities, the Government is promoting construction of new housing units.

Instituto Venezolana de la Vivienda (INVEVI), formerly Banco Obrero, is the principal government agency charged with providing low-cost housing. It operates under MOP. This agency has budgeted more than \$1.6 billion for new construction during the 1975-79 period (see table 3).

Table 3.—Planned construction of low-cost housing in Venezuela, 1975-79
(in millions of U.S. dollars)

Year	Units	Investment
1975	63,150	\$303
1976	65,000	312
1977	66,750	320
1978	68,500	328
1979	70,250	339

Source: 1974 *Memoria* of the Ministerio de Obras Publicas.

The lower-middle-class housing shortage is addressed in the mixed private and public program covered under 1974 Decree No. 346 (see above). This law established broad tax and other incentives for private contractors who undertake to build and sell specific types of nonluxury condominium apartment buildings. Trade sources estimate that 65,000 housing units of all types will be built in 1976 and some 95,000 in 1980 (see table 4).

A number of factors make it difficult for the Government to meet its housing goals. Most of them are related to inflation. It has raised the cost of materials and land to the point where the cost of the housing exceeds the limits established by the Government in defining what is low-cost. For example in Caracas demand and speculation have pushed up the price of land considerably in recent years. Little land is available in the city now for less than \$256 per square meter and in the better areas this has risen to \$466-\$560 per square meter.

This situation has put increasing upward pressure on rents. Although the Government has denied it

Table 4.—New housing units put in place, 1972-74, 1976, and 1980

	1972	1973	1974	1976	1980
Public construction					
One-unit	11,377	19,752	11,637	13,839	18,680
Multi-unit	19,388	47,871	19,756	22,744	35,567
Total	30,765	67,623	31,393	34,583	54,247
Private construction					
One-unit	3,733	3,405	3,825	4,284	5,797
Multi-unit	19,013	19,790	20,548	25,284	34,397
Total	22,746	23,195	24,373	29,568	40,194
Grand total	53,511	90,818	55,766	64,151	94,441

Source: *Estadísticas del Comercio Exterior de Venezuela—Importación: Artículo y País, 1972, 1973 and 1974*. Dirección General de Estadísticas y Censos Nacionales, Ministerio de Fomento, Caracas.

is considering rent control, there are enough rumors circulating to make builders nervous. Rental apartment buildings have become less attractive to investors because of the relatively high cost of maintenance, municipal taxes, etc. Also affecting the situation is the recent decree ordering all elevators in the country to be manned, although most of them were designed for automatic operation.

There are other problems that arise in building in Caracas. One is the need for earthquake-proof structures. Also, because of the density of building and the virtual absence of open space, an older edifice has to be torn down before another can be put up. Construction has to be done during the day because of the invariable proximity of residential areas that need some respite from the resulting noise. The Venezuelan Government also has decided to establish "green zones" on the periphery of the city where there is to be no construction. To add to the confusion, the number of local planning agencies that have the right to veto any particular project has proliferated.

Within the private housing market there are two primary sources of financing. The *Sistema de Ahorro y Prestamo* (Savings and Loan) serves the middle-of-the-market houses and apartments with an average selling price of about \$22,000. In the metropolitan Caracas area \$40 to \$45 million circulates through the System to finance this type of construction at medium and long term. The *Banco Hipotecario* (Mortgage Bank), deals in luxury dwellings, those selling for more than \$45,000 per unit. This latter type of construction is usually financed at short or medium term.

ROADS

At the end of 1974, Venezuela's highway system included 47,297 kilometers (km) (1 km = .62 miles) of all-weather roads plus 18,241 km of roads passable only in the summer. The system connects all areas having more than 2,000 inhabitants. According to MOP, every population center but one can be reached in 1 day by road from Caracas. The sole exception is Puerto Ayacucho in the Amazon Territory. The present roadways serve 70% of the people and are considered essentially adequate for current needs. In fact, some sections are considered over-designed.

Total investment in road building over the 1975-79 period is estimated at \$1 billion, fairly evenly divided over the 5 years. About \$400 million of this is allocated for opening new farm roads. The remainder will be spent primarily on maintenance and, where needed, enlargement of existing roads.

MOP, through the *Direccion de Vialidad*, is the principal planning and executive entity for just over 43% of Venezuela's roads. *Direccion's* man-

date includes the construction of freeways, highways, roads, and rural access roads, along with the construction of ports and airports. Of its total budget, *Direccion* has traditionally applied about 40% to the road system; 1975 expenditures were divided as follows:

Studies and drafting of projects	\$ 16.2 million
Maintenance of existing works	81.1 million
Construction	159.9 million
Inspection and general expenses	67.5 million
Total	324.7 million

The rest of Venezuela's roads were built for specific projects and are administered by a variety of agencies, including the *Gobernaciones de Estado*, the Ministry of Agriculture, the National Agrarian Institute, the petroleum companies, *Corporacion Venezolana de Guayana* (CVG), etc. There is also a special MOP-*Gobernaciones* program that spends \$66 million a year to repair and renovate urban roadways.

CARACAS SUBWAY

After years of delay, the President gave the go-ahead for construction of the Caracas Metro subway system in March 1975. The first section, Propatria to La Hoyada on the Catia-Petare line, is scheduled for completion in 1979. The entire project is expected to cost \$445 million, with construction accounting for about 60%.

Most of the construction expenses (about 80%) will be for "heavy construction," especially that needed for the underground sections. This includes the installation of concrete and steel structures and related work such as excavation, pile-driving, temporary decking, underpinning, etc. Some idea of the scope of Metro construction can be gained from the statistics provided for the first section alone (see table 5).

Approximately 44% of the total underground line between stations will be built by tunnelling and

Table 5.—Concrete and earth movement requirements of the first section of the Catia-Petare line of the Caracas Metro

Type of structure	Length (meters)	Concrete m ³	Movement of earth Excavation/refill m ³	
Underground stations (6)	1,075	119,000	424,600	88,000
Elevated stations (2)	332	12,800	6,900	6,600
Cut and cover line	1,447	31,200	180,700	87,300
Twin tunnel line ¹	2,381	15,000	113,400	—
Arch tunnel line ²	634	11,300	37,900	—
Other	—	7,200	—	—
Total	5,869	196,500	763,500	181,900

¹ Using 42,000 prefabricated sections.

² Using 1,910 prefabricated sections.

Source: *La Voz de la Construcción* (1974).

about 30% by cut-and-cover construction. The underground stations are also to be done by the cut-and-cover method. Since the soils of the Caracas Valley are primarily alluvial and sedimentary (down to more than 50 meters), little rock is expected to be found between the extremities of the Catia-Petare line. Thus the tunnelling operation, a method not previously employed on a large scale in Venezuela, is expected to proceed smoothly. Elevated construction and construction at grade level will probably constitute less than 10% of the total length of the line.

Most of the tunnels will be lined with concrete, except in cases where better waterproofing is needed; then steel liners will be used. Both the concrete and steel liners will be produced in Venezuela.

Up-to-date information on the progress of all facets of construction of the Caracas Metro is available from the *Oficina Ministerial del Transporte* (Ministry of Transportation) at *Edificio Camejo 5º piso, Esquina de Camejo, Caracas*. The construction engineer for the first section of the Metro is the firm of Parsons, Brinkerhoff, Tudor, and Bechtel.

OUTLOOK FOR AMERICAN SUPPLIERS

U.S. manufacturers have steadily increased their sales in Venezuela over the past few years. They are expected to continue this progress as the construction industry grows. Although domestic production of most building materials and equipment is projected to expand at a faster rate than imports, it cannot keep pace with the growth in demand. The import market will remain strong. Some items, such as construction equipment, will continue to be provided almost entirely by foreign sources.

Building Materials

Virtually all materials used in housing and commercial building construction are produced locally. Nonetheless, there are some excellent sales opportunities for U.S. suppliers. For example, 1976 sales of American-made plumbing, heating, and pipe products are estimated at nearly \$36 million. Miscellaneous building products sales are expected to exceed \$10 million. Sales of the small items classed as builders hardware are approaching \$6 million.

Among the leading products supplied from the United States are the softwoods. Venezuela has an abundance of hardwoods, but the construction industry is expected to increase its imports of dressed lumber for use in doors, frames, windows, cabinets, and moldings.

Many U.S. products are purchased because their quality surpasses anything available locally or from third countries. Items in this category would include

varnishes; iron structures such as beams, posts, and bridge and tower elements; iron, steel, or copper pipes; and copper accessories for pipings.

Domestic production cannot meet the rapidly increasing demand for sheet glass. U.S. suppliers can use their image of superior quality to maintain a good share of the imports. However, price is becoming an important purchase factor, with Japanese products gaining an increasing portion of sales. The U.S. owns practically the entire import market for glass building products, primarily because of product design. This situation is expected to remain the same over the next few years.

Other items valued particularly for their design characteristics include faucet sets, valves, aluminum structure parts, and pipeline accessories. The market for U.S.-made bolts, nuts, screws, etc., is significant due to their design and performance, although Japan is undercutting the U.S. position by offering goods at lower prices. Hardware articles from U.S. suppliers are sought when high quality is desired: cheaper products from other countries are considered inferior in this category.

Demand for unwelded pipes of iron or steel is extremely large because of the emphasis on heavy industrial projects. National production is small at present, although the government-owned metal industries plan to expand their capacity. U.S. products are desired for their performance. The use of plastic pipes in construction is just beginning a growth stage. U.S. products are good potential sellers because they are known for their performance and quality.

Local production of mastics with a plastic material base is very small. Because of the advanced nature of the U.S. products, American suppliers command almost the entire import market. Strong consumer preference for the U.S. goods is expected to keep demand high. U.S. suppliers also dominate the import market for manufactured plastic materials. The performance and versatility that consumers see in these products assures continued good sales.

U.S.-made air conditioning unit sales are expected to reach \$25 million in 1976; end users cite quality, design, and performance as reasons for their selection.

Construction Equipment

Venezuelan contractors generally use less machinery than their U.S. counterparts because labor is still relatively inexpensive. An unskilled laborer (e.g., a cart pusher) earns about \$6.50 per day, while an experienced crane operator earns \$3 an hour. As an example of the difference in methods, in Venezuela a simple winch will often be employed where a crane would be used in the United States.

U.S. manufacturers have been able to sell quantities of handtools, such as pliers, tongs, and wrenches, in Venezuela. The design and durability of American products are expected to produce 1976 sales of \$7 million. However, rising wages are contributing to very rapid growth in demand for power tools. U.S. sales are projected to grow from more than \$7 million in 1976 to over \$15 million in 1980.

Almost the only type of crane employed in Venezuela is the tower crane. None are produced locally, and U.S. products are preferred because of their performance and durability. Some European companies have established themselves in the market, and Colombian suppliers appear about to make inroads.

Forklift trucks from the United States have been good sellers and should continue to be so since their versatility and performance are well recognized. Price is becoming a factor, giving an edge to Japanese products. They are starting to gain.

U.S. suppliers have had the lion's share of the market for heavy construction equipment, especially in tractor-type vehicles (Caterpillar, John Deere, and International Harvester). The Japanese firm Komatsu made great strides in 1974 when a worldwide scarcity of tractors slowed deliveries from the United States. This shortage was alleviated in 1975. All types of U.S.-made equipment are now selling well, particularly road rollers and tampers, and machines for extracting, grading, excavating, or perforating soil. Government efforts to increase the development of local agriculture are expected to further increase demand for equipment that can break through rough terrain. All of this equipment will have to be imported, since there is no local production and none is planned. It should be noted that as much as 50% of heavy equipment entering the country is used machinery. This creates an unusually large need for parts.

Venezuelan builders are beginning to use some prefabricated construction in buildings large enough to make it economical. The relatively simple tunnel method (involving pouring concrete on shapes) can save about 12% in costs when floorspace equals 30,000 square meters or more. Since Caracas is the site of frequent tremors, all structures are erected with prestressed continuous casting concrete columns and floors. Prefabrication is also used extensively in bridges in the form of prefabricated prestressed concrete beams.

Engineering and Technical Services

Massive investments are being made in a number of basic industries in Venezuela. All of these projects have a construction component which, when added to what is generally considered to be tradi-

tional construction activity (housing, roads, etc.), places a heavy burden on local builders. The question logically arises as to whether domestic construction firms have the financial and technological ability to handle the job without considerable help from outside the country.

The Venezuelan Chamber of Construction has replied affirmatively. In fact, it is lobbying the Government to make construction one of the industries reserved for nationals only under the Venezuelan legislation adopted in the spirit of the Andean Pact (primarily Decree No. 62 of April 29, 1974). The Chamber is expected to succeed in this effort.

The local industry could probably handle all the building in the Caracas metropolitan area in the next few years without foreign capital and know-how. It could also handle a good deal of the less technical construction that needs to be done in the rest of the country. But there appears to be a sizable gap between the totality of diverse, decentralized, and technical construction needed to support the National Development Plan and the capability of the local construction industry.

The fact that the practice of engineering and other technical services are already reserved to nationals, plus various administrative roadblocks, has made it virtually impossible for a foreign construction firm to set up operations in Venezuela. In realization of this, the Venezuelan Government has proposed a law to provide some relief from the straitjacket of present legislation. This proposal should be passed by the Congress without difficulty. It will allow foreign companies to establish joint ventures (with no less than 51% national capital) in order to provide essential services to projects of high developmental priority. These joint ventures could then contract with foreign firms for needed technology. Both the joint venture and the contract for technology would have to be approved on an ad hoc basis by SIEX—the Superintendency of Foreign Investment.

This new system would leave a lot to administrative discretion. The proof of its effectiveness in relieving technical bottlenecks in construction and design engineering would come in its practical implementation. How this greater flexibility will extend to the practice of design engineering is not clear—the likelihood is that it will continue to be controlled by the Venezuelan College of Engineers.

Domestic industry is interested in, and has recognized the need for, foreign consulting. It has also repeatedly requested selective immigration of skilled workers to alleviate local shortages. These deficiencies will certainly become serious when several major projects (Guri Dam, steel plants, housing projects, Caracas Metro, and others) are started simultaneously.

STANDARDS AND TECHNICAL REQUIREMENTS

In general, most of the building codes in Venezuela are based directly on U.S. or European standards. Efforts are underway to conform with accepted international standards. Traditionally, materials and equipment from the United States have been the accepted models. The technical requirements built into this equipment are considered to be the proper standard. Even when U.S. products do not meet local standards, they sell. For example, the metric system is the official measure in the country, yet gages employing U.S. units are widely used.

The status of building codes in Venezuela is an area of some uncertainty. Official regulations are more related to zoning regulations than actual construction techniques. They are issued at various levels. Some of the confusion in these codes can be shown by a review of the authorities acting in Caracas alone. The metropolitan area of the city is divided between two government entities. About half of Caracas falls within the Federal District (Distrito Federal) which has status equivalent to a state. The other half falls within the State of Miranda. The Federal District and the State of Miranda are divided into districts that have their own governing councils, which proclaim the various construction regulations. After the regulations are published, each district has its own section of Municipal Engineers who are charged with enforcing the regulations.

Within the area of Caracas the major building codes are contained in the following publications:

"Ordenanza sobre Zonificacion del Departamento Libertador." *Gaceta Municipal de Distrito Federal*. No. Extraordinario de Fecha 30-9-71.

"Ordenanza Modificatoria de la Arquetectura, Urbanismo y Construcciones en General." *Gaceta Municipal de Distrito Federal*. Extraordinario No. 310 de fecha 11-4-73.

"Ordenanza de Zonificacion." *Gaceta Municipal del Departamento Sucre, Estado Miranda*. Gaceta No. 1., Agosto 1972.

Changes to these codes have been made for specific plots or locations. Current information about the regulations can be obtained from the principal enforcement agencies. For the area of Caracas these are:

Departamento Libertador, Distrito Federal
Direccion de Obras Municipales
Departamento de Control de Construcciones
Zona Rental, Plaza Venezuela
Caracas, Venezuela

Ingenieria Municipal, Distrito Sucre, Estado Miranda
Avenida Chicago (cruce con Avenida Milan)
Edificio Revan, 1º piso
La California Sur
Caracas, Venezuela

For regulations applying to areas outside of Caracas, information can be obtained from the municipal engineer (ingenieria municipal) of that locality.

Building codes related to sanitary standards in construction are applied on a national level and are issued by the Ministry of Health (Ministerio de Sanidad y Asistencia Social). These regulations are contained in the following publications:

"Normas Sanitarias para Proyectos y Construcion. Reparacion y Reforma de Edificos." Ministerio de Sanidad y Asistencia Social. *Gaceta Oficial de la Republica de Venezuela*. No. 752 Extraordinario. 26 Feb. 1962.

"*Ibid.*" Anexos

The enforcement of the sanitary regulations is carried out by units of the Health Ministry. In Caracas, these inspection units are as follows:

Unidad Sanitaria de Zona Metropolitana
Esquina Pajaritos
Unidad Sanitaria del Norte
Dos Pilitas a Portillo So. 52, La Pastora
Unidad Sanitaria, Centro-Oeste
Cruz da la Vega a Palo Grande, Avenida San Martin
Unidad Sanitaria del Sur
Avenida Roosevelt, el Cementerio
Unidad Sanitaria de El Valle
Calle Real Los Jardines de El Valle,
entre 3a y 4a transversal
Unidad Sanitaria de Mariperez
Avenida Andres Bello, esquina Santiago de Leon
Unidad Sanitaria del Este
Avenida El Carmen, Quinta La Gonzalera
Buena Vista, Petare
Unidad Sanitaria de Catia
Calle Bolivar y Catia, frente a Textilera Saturno,
Catia
Unidad Sanitaria "23 de Enero"
Final Calle Colombia, Sector Oeste, Puericultura,
23 de Enero
Unidad Sanitaria de Antimano
Calle el Carmen, Antimano

Sanitary units are also present in all the other major cities, and for rural areas at the state office for that locale.

The final set of obligatory regulations is related to fire safety. These are created by the National Fire Department in conjunction with the National Commission for Industrial Norms (Comision Venezolana

de Normas Industriales-COVENIN). The following regulations have been published:

"Medios de Escape: Guia Instructiva Sobre Medios de Escape." Comision Venezolana de Normas Industriales, Norma 823-74, 15 Oct. 1974.
"Guia Instructiva Sobre Sistemas de Deteccion, Alarma y Extincion de Incendios." Comision Venezolana de Normas Industriales, Norma 810-74, 5 Oct. 1974.

The above regulations are enforced by the fire departments of each city or state.

The MOP has established various codes and regulations related to government construction. All public works must conform to these regulations, but they are not obligatory for private construction. However, most private construction projects, particularly the larger projects, are designed to satisfy these codes. The most important of these codes are listed below:

"Normas para el calculo de Edificio," "Estructuras de Madera y Estructuras Metalicas." MOP, 1955.

"Instrucciones para el calculo de instalaciones de vapor e Instrucciones para las Instalaciones de vapor." MOP, 1962.

"Instrucciones para la elaboracion de planos para edificacion." MOP, 1962.

"Normas para la construccion de edificios"—Revestimientos y Acabados en paredes y otros elementos, Pavimentos, Protecciones contra radiaciones." MOP, 1962.

"Normas para la construccion de edificacion—Obras temporales e impermeabilizacion." MOP, 1963.

"Especificaciones Generales para la construccion de edificios." MOP, 1966.

"Normas para mediciones de edificios." MOP, 1965.

"Normas para el calculo de estructuras de concreto armado para edificios—teoria Clasica." MOP, 1967.

"Instrucciones para la ejecucion de: Replanteo-Obras de Fabrica-Soldaduras-Vidrio Concreto Liviano-Protecciones Acusticas y Termicas-Pintura." MOP, 1967.

"Norma provisional para construcciones antisismicas." MOP, 1967.

"Manual de Normas y Criterios para Proyectos de Instalaciones Electricas." MOP, 1968.

"Instrucciones para la elaboracion de planos para edificacion—Estructuras." MOP, 1969.

"Manual para el calculo de estructuras de concreto armado para edificios." MOP, 1969.

"Normas para la construccion de edificios—Obras de concreto armado." MOP, 1971.

The MOP department in charge of issuing these codes is:

Ministerio de Obras Publicas
Direccion de Edificion
Departamento de Normas
Edificio BANVEN, Piso 9
Puente Nueva a Madereo, El Silencio
Caracas

The department in charge of enforcing the codes, as related to public construction, is:

Ministerio de Obras Publicas
Division de Direccion de Construccion
Torre Sur, Piso 10, El Silencio
Caracas

Information related to obtaining copies of these codes can be obtained from the following office:

Ministerio de Obras Publicas
Oficina de Informacion y Relaciones Publicas
Torre Sur, El Silencio
Caracas

Another section of MOP is involved with establishing codes for the construction of roads and highways. This office is:

Ministerio de Obras Publicas
Direccion General de Vialidad
Oficina de Planificacion y Proyecto
Oficina de Normas
Edificio IASA, Plaza La Castellana, Oficina 107
Caracas

The codes of this agency are contained in the following publications:

"Normas para la Construccion de Carreteras." MOP, Marzo, 1975.

"Normas para el Proyecto de Carreteras." MOP, Mayo 1975.

"Normas para el Estudio Geotecnico de Carreteras." MOP, 1976.

"Manual de Normas y Criterios para Instalaciones de Iluminacion Publica." MOP, Feb. 1976.

These publications can be obtained at the office mentioned above; their enforcement is carried out by the Division de Direccion de Construccion.

The Government has yet not established any obligatory standards for construction materials and equipment. An agency is in the process of studying various industrial norms and has issued some optional standards for materials. Items produced locally according to these standards are given a special mark (NORVEN and Normas Venezolanas) and are preferred by government agencies and institutions. Copies of these norms can be obtained from the office that issues them and also carries out the inspections related to their enforcement:

Comision Venezolana de Normas Industriales—
COVENIN
Direccion de Normalizacion y Certificacion de
Calidad

Ministerio de Fomento
Edificio Fundacion La Salle, Piso 5
Avenida Boyaca
Caracas

12 Financial Institutions

As a result of a dramatic increase in oil revenue, Venezuela's financial system expanded rapidly in 1973 and 1974. Many new investment funds for industrial, agricultural, and construction purposes have been created or reorganized. Banking, savings and loan, and insurance institutions have shown remarkable growth. Several decrees issued by the Government in 1974 will directly affect the country's financial institutions. They include the New Banking and other Credit Institute Law, the Insurance Company Law, the National Housing Institute Law, the Agricultural and Livestock Credit Institute Law, and the Capital Markets Law. These laws will expand the scope of some financial institutions, limit foreign ownership, and provide new sources of financing for certain sectors of the economy. Imports of office and computer equipment will also be affected by these changes. For example, the new Banking Law authorizes the microfilming of checks and acceptance of microfilm as legal evidence. Increased activities of commercial banks, insurance, and finance companies will require further expansion and upgrading of computer and data systems. Physical expansion of main offices and branches will demand additional modern office equipment. In general, Venezuelan financial institutions continue to offer tremendous potential for U.S. products and equipment, especially in high technology areas.

STRUCTURE OF THE FINANCIAL SYSTEM

The Venezuelan financial system is made up of the banking institutions and public and private financial establishments. The following list provides a breakdown of the various institutions, funds, and corporations:

Monetary authorities
Central Bank
Ministry of Finance

Banks

Specialized official banks
Commercial banks
Mortgage banks
Public financial institutions
Venezuelan Development Corp. (CVF)
Venezuelan Guayana Corp. (CVG)
National Savings and Loan Bank (BANAP)
Venezuelan Investment Fund (VIF)
Industrial Credit Fund
Agricultural Credit Fund
Exports Development Fund
Medium and Small Industry Development Corp. (CORPOINDUSTRIAS)
Private financial institutions
Insurance companies
Savings and loan associations
Finance companies (Financieras), and others.

Each one of these institutions will be considered briefly. The relative importance of these institutions may be seen in Tables 1, 2, and 3.

BANKS

At the head of the financial system is the powerful Venezuelan Central Bank. It regulates and maintains the currency and credit of the country's financial structure. A second government institution, the Ministry of Finance, through its Superintendency of Banks, is the controller of the activities of the commercial and mortgage banks and the finance companies, regulating their administrative and credit procedures.

The Central Bank

Established in 1940, the Venezuelan Central Bank is a powerful financial organization, controlling the currency and credit conditions needed for the economic development of the country. As of November 1975, total bank assets were almost \$8.7 billion, up 635% from 1970.

Table 1.—Balances of the financial institutions
(in millions of U.S. dollars) ¹

	1973		
	Assets	Liabilities	Capital and Reserves
Central Bank	2,521.9	2,137.0	384.9
Public Institutions	4,466.7	1,600.2	2,866.5
Private Institutions	8,731.6	7,321.9	1,409.8
Total	15,720.2	11,059.1	4,661.2

¹ Exchange rate: Bs 4.30=U.S. \$1.00.
Source: Economic Report 1973 and 1974, Venezuela Central Bank.

Table 2.—Balances of the public financial institutions
(in millions of U.S. dollars) ¹

	1973		
	Assets	Liabilities	Capital and Reserves
Venezuelan Development Corp.	734.0	200.0	534.0
Venezuelan Guayana Corp.	789.3	38.1	751.2
Bank for Agriculture and Livestock	692.8	180.2	512.6
Worker's Bank (Banco Obrero)	1,554.7	757.2	797.4
National Savings and Loan Bank	175.1	99.3	75.8
Bank for Agricultural Development	147.2	127.9	19.3
Social Security systems	187.7	118.6	69.1
Other	186.0	78.8	107.2
Total	4,466.8	1,600.1	2,866.6

¹ Exchange rate: Bs 4.30=U.S. \$1.00.
Source: Economic Reports 1973 and 1974, Venezuelan Central Bank.

International reserves were placed at \$8.8 billion in December 1975, putting Venezuela among the top 10 countries of the world in terms of total international reserves.

Table 3.—Balances of the private financial institutions
(in millions of U.S. dollars) ¹

	1973		
	Assets	Liabilities	Capital and Reserves
Commercial Banks	5,109.1	4,595.3	513.7
Mortgage Banks	1,129.5	1,051.9	77.7
Insurance Companies	579.8	484.4	95.3
Capital Financing Companies .	11.4	8.6	2.8
Savings & Loan Associations .	540.0	525.6	14.4
Finance Companies	587.0	478.4	108.6
Investment Companies	134.0	36.7	97.2
Savings Funds	395.1	36.3	358.8
Consumer Financing Companies	3.5	3.3	.2
Other Financing Companies ..	242.3	101.4	140.9
Total	8,731.7	7,321.9	1,409.6

¹ Exchange rate: Bs 4.30=U.S. \$1.00.
Source: Economic Reports 1973 and 1974, Venezuelan Central Bank.

Among the more important functions of the Central Bank are: Control of the money flow, maintenance of currency reserves, regulation of the credit activities of the commercial banks and other financial institutions, maintenance of the liquidity and stability of the banking system, and representation of Venezuela at the International Monetary Fund. A condensed balance sheet of the Bank for the years 1970 through April 1975 is given in Table 4.

Commercial Banks

Commercial banks are becoming modern, active organizations due to government efforts to stimulate credit availability in all economic sectors by channeling government credit funds through the commercial bank system. Recent incorporation of sophisticated banking technology has made room for substantial expansion of the market for modern banking equipment.

Trade sources estimate that in 1975 the combined total market for business machines, computer

Table 4.—Condensed balance sheet of the Central Bank of Venezuela
(in millions of U.S. Dollars) ¹

	1970	1971	1972	1973	1974	April 1975 ²
Net International Reserves	860	1,290	1,507	2,344	6,318	7,579
Disbursements and Investments ³	108	30	19	46	106	42
Cash	82	79	86	90	79	93
Other	27	33	40	43	53	127
Total	1,077	1,432	1,652	2,523	6,556	7,841
Currency Issued	533	572	664	768	1,021	923
Deposits	381	617	714	1,203	2,803	2,371
Capital and Reserves	113	126	140	385	446	446
Investment Fund	—	—	—	—	2,738	3,588
Other	50	117	134	167	268	513

¹ Exchange rates used: 1970-71: Bs 4.50=U.S. \$1.00, 1972: Bs 4.40=U.S. 1.00, 1973-75: Bs 4.30=U.S. \$1.00.

² Through April 1975 only.

³ Disbursements includes loans, discounts, and overdrafts.
Source: Boletín Mensual, Banco Central de Venezuela.

equipment, and related equipment and parts will amount to \$81 million. Banks will purchase approximately 28% (\$22.7 million) of all equipment sold, the highest for a single sector.

As of May 1975, there were a total of 31 banks—29 privately owned, one foreign controlled, and one government owned. These banks have 753 branches throughout Venezuela (see Table 5). Of

Table 5.—List of Venezuelan commercial banks, location of headquarters and total number of branches, 1974

	<i>Location</i>	<i>Branches</i> ¹
Banco de Maracaibo	Maracaibo	41
Banco de Venezuela	Caracas	86
Banco Caracas	Caracas	22
Banco Comercial de Maracaibo	Maracaibo	15
First National City Bank of New York	Caracas	4
Banco Holandes Unido	Caracas	2
Banco Venezolano de Credito	Caracas	8
Banco Mercantil y Agricola	Caracas	38
Banco Industrial de Venezuela	Caracas	23
Banco Union	Caracas	80
Banco de Fomento Comercial de Venezuela	Barquisimeto	12
Banco Latinoamericano de Venezuela	Caracas	37
Banco de Fomento Regional Coro	Coro	5
Banco de Fomento Regional Los Andes	San Cristobal	19
Banco Provincial de Venezuela	Caracas	24
Banco Italo Venezolano	Caracas	40
Banco Metropolitano	Caracas	13
Banco de Lara	Barquisimeto	14
Banco de Comercio	Caracas	16
Banco Nacional de Descuento	Caracas	40
Banco del Caribe	Caracas	40
Banco de Fomento Regional Guayana	Bolivar	6
Banco Exterior	Ciudad	
Banco Occidental de Descuento	Caracas	12
Banco de Fomento Regional Zulia	Maracaibo	13
Banco Republica	Caracas	12
Banco de Occidente	Caracas	16
Banco La Guaira Internacional	San Cristobal	12
Banco de la Construcción y Oriente	La Guaira	17
Banco del Centro Consolidado	Caracas	12
Banco Royal Venezolano	Caracas	24
Total		49
		13
		753

¹ Total includes Main offices, branches and agencies.
Source: Monthly Bulletin No. 181, December 1974, Superintendency of Banks.

the 31 banks, it is estimated that 26 have computer systems, and three of them have or are installing terminal systems in their branches.

Representative branches in Venezuela are maintained by 35 foreign banks, 15 of which are U.S. and include:

Bank of America
Chemical Bank
Bankers Trust Co.
Manufacturers Hannover Trust Co.
Continental Illinois National Bank & Trust Co. of Chicago
Morgan Guaranty Trust Co.
The Equitable Trust Co.
The First Wisconsin National Bank of Milwaukee
The Chase Manhattan Bank
Irving Trust Co.
Provident National Bank
Wells Fargo Bank National Association
Republic National Bank of New York
Crocker National Bank
First National Bank of Chicago

Venezuelan Banks with representative offices in the U.S. include the Banco Mercantil y Agricola, C.A., the Industrial Bank, and the Union Bank. All three have offices in New York City.

The new Banking Law of 1975 does not permit the establishment of partially or fully foreign-owned banks, with the exception of banks from other Latin American countries where Venezuelan banks, in all likelihood, would receive reciprocal treatment. Those banks which were more than 20% foreign-owned prior to the passage of this law will be permitted to operate, but with severe limitations on their banking operations. Only one bank, First National City Bank of New York, is still attempting to operate as a fully foreign-owned bank.

Local banks with 20% or less foreign participation include: Banco Mercantil y Agricola (Chase Manhattan Bank); Banco Provincial (Credit Lyonnais); Banco Latino Americano (Banque Francaise et Italienne de l'Amerique du Sud); Banco Royal Venezolano (Royal Bank of Canada); Banco Exterior (Banco Exterior, Spain); Banco La Guaira Internacional (Bank of London and Montreal); and Banco Holandes Unido (Netherland's Hollandsche Bank Unie).

Representative offices are not permitted to conduct any banking activities and are required to go through a local bank for any kind of financial operation.

Total assets in the consolidated balance of the commercial banks were \$9.3 billion as of November 1975, an increase of \$2.5 billion over December 1974. Total deposits during 1975 amounted to \$7.3

billion, \$2.0 billion more than 1974. The total number of depositors as of December 1974 was 1,780,000. Discounts and loans granted by commercial banks reached \$5.9 billion and were distributed by percentage among the following sectors, according to the December 1975 Monthly Bulletin of the Superintendency of Banks:

Business	32.19
Industrial and Mining	22.80
Agriculture	11.57
Construction	8.30
Services	9.16
Other	14.69

The commercial, financial, and industrial sectors of Venezuela have shown a tendency to group themselves into powerful conglomerates controlling large manufacturing, service, and financial corporations. Some of the more important conglomerates include:

1. The Mendoza Group controls about 42 large corporations, with capital totaling \$155 million. It is engaged in the distribution of construction equipment and materials, animal feeds, metal working equipment, and the production of cement, paint, and paper. The group also controls the Banco La Guaira Internacional, the mortgage bank Banco Hipotecario de la Vivienda Popular and two investment companies.

2. The Montana Group is an industrial conglomerate based on common family investment. It includes a large variety of companies, which are primarily engaged in manufacturing paints, chemicals, and adhesives; and in providing advertising, printing, and computer services. This group has extended to other countries of Latin America, especially in paint manufacturing.

3. The Zingg Group has major investments in the banking and industrial sectors, including automobile assembling, paint manufacturing, and sugar milling.

4. The Cisneros Group, a rapidly growing group with activities in nonalcoholic beverages, has recently purchased both majority or total interest in the main supermarket chain and National Cash Register operations in Venezuela.

5. The Gonzales Gorrondona Group controls an estimated 120 firms, the most important of which is the Banco Nacional de Descuento (B.N.D.). Its affiliated firms operate warehouses, ship lines and ferry boats, machinery distribution outlets, boat manufacturing facilities, financing companies, and credit card services.

Generally all these groups centralize their operations and tend to do their own purchasing within the companies of the conglomerate. Sometimes one of the affiliates is appointed as a purchasing repre-

sentative. This means that one could have immediate access to the market that the group controls; on the other hand, this may make it more difficult to sell to the other groups who might handle a competitor's lines.

Housing Financial Institutions

In recent years, the housing sector has received considerable attention from the government. Several public and private organizations have been created or reorganized to provide financing and/or construction services for those who need it. During 1974 the public sector financed the construction of almost 58,000 housing units; over 31,000 were actually built with the rest expected to be completed in early 1975. Total public investment was \$358.4 million. The Banco Obrao (now the National Housing Institute) financed 77.5% of the houses built with public funds. The private sector constructed approximately 25,800 housing units, with an estimated investment of \$465 million, largely financed by private financial institutions.

Mortgage Banks (Bancos Hipotecarios)

These banks were established to grant long-term loans (with mortgage guarantees) for the purchase, construction, or expansion of houses, buildings, or apartments. Mortgages have 25 year terms on up to 75% of the value of the property. The main source of income for these banks is 15-year, 8% tax exempt bonds, known as "Cedulas Hipotecarias." At the end of 1974, mortgage banks' outstanding bonds amounted to almost \$1.3 billion, an increase of \$281 million over 1973. The total balance of loans for 1974 was slightly over \$1.3 billion, up \$314 million over the previous year. The majority (67.3%) of requested loans were used for private housing. As of December 1974, 13 mortgage banks were in operation throughout Venezuela (see Table 6).

National Savings and Loan Bank (B.A.N.A.P.)

BANAP supervises and regulates the entire national savings and loan association system. It also grants loans to the different associations in order to maintain the level of funds available to the public for housing loans. During 1974, \$139 million in loans were granted to the association by the bank, a figure that is expected to double during 1975.

Savings and Loan Associations

The National Savings and Loan Association System, established in 1963, consists of BANAP and 22 private savings and loan associations. Their total

Table 6.—Mortgage banks, list of main offices and branches by loans granted, 1974
(in millions of U.S. dollars) ¹

Name Banco Hipotecario	Main Office and Branches	Total Loans
de Credito Urbano	5	260.4
Unido	4	253.6
del Zulla	5	174.6
Venezolano	2	158.6
de la Vivienda Popular	3	140.6
del Centro	2	86.4
de Occidente	2	80.5
Consolidado	3	61.0
del Este	2	60.0
de la Construccion y Oriente	2	58.1
de Aragua	1	7.3
del Desarrollo Inmobiliario	1	3.8
del Orinoco	1	.3
Total	33	1,345.2

¹ Exchange rate: Bs 4.30=U.S. \$1.00.
Source: Monthly Bulletin, December 1974. Superintencia de Bancos.

assets as of December 1974 were valued at \$740.7 million, with \$556.1 million deposited in savings accounts. During 1974, \$158.1 million were granted for housing loans, bringing the cumulative total since 1962 to \$638.1 million. The 22 associations now have 139 branches and a total of 559,605 depositors. The average amount saved by depositors is \$993, and the average loan granted for purchase or construction of housing amounted to \$14,448 (see Table 7).

Table 7.—Savings and loan associations, number of savings deposited and total amounts of savings, 1962-1974

Year	Deposit at end of year	Percent of interest	Balance of savings at end of year ¹
1962	661	647.5	.4
1963	4,941	263.4	4.9
1964	17,955	61.1	15.1
1965	28,932	32.0	25.9
1966	38,193	34.7	29.8
1967	51,461	63.6	42.1
1968	84,210	51.3	69.9
1969	127,416	43.4	112.7
1970	182,725	36.4	171.4
1971	249,151	34.0	246.4
1972	333,983	28.7	312.3
1973	429,828	30.2	412.2
1974	559,605	—	556.1

¹ In thousands of U.S. dollars.
Source: 1974 Annual Report, National Savings and Loans Bank.

The National Housing Institute (Instituto Nacional de la Vivienda)

This institution, formerly known as the Banco Obrero, was reorganized in May 1975 in an effort to modernize its administrative structure and its

construction procedures. The institute grants long-term loans for low-cost housing (especially for workers), and constructs housing complexes and buildings through contractors. It is funded by the national budget and by placing bond issues on the capital market. The organization had almost \$1.6 billion in assets as of December 1973. During the same year, it granted \$398 million in housing loans or 16.7% of the total loans granted by private housing financial institutions for that year. According to the new law that reorganized this institute, it will operate with a capital base of nearly \$1.2 billion and thus will probably become the main channel for achieving government goals in low-cost housing.

The Worker's Bank (Banco de Los Trabajadores)

The Worker's Bank operates as a commercial bank, even though it is government controlled. It also specializes in housing loans for workers. The Bank is a large recipient of deposits from government institutions. As of March 1975, it had \$93.5 million in assets, with deposits from other government organizations amounting to \$58 million. Commercial banking activities of the Worker's Bank are small when compared to private commercial banks.

AGRICULTURE FINANCIAL INSTITUTIONS

During the last decade, Venezuelan agricultural output has deteriorated due to poor government policies, lack of financing and incentives, and population migrations to the urban industrial areas. This situation forced the government to take steps during 1974 to make the agricultural sector more attractive and to provide funds for financing and accelerating agricultural development. Here again, new organizations have been established, and others have been reorganized as part of the total effort to improve output and decrease the country's great dependency on food imports. Financial institutions in this sector have been funded generously.

Institute for Agriculture and Livestock Credit (Instituto de Credito Agricola y Pecuario)

This organization was reorganized in May 1975 by government decree, as a part of the overall effort to stimulate the sector. Previously known as the Banco Agricola y Pecuario, B.A.P., the institute's main activities center on credit operations for agriculture, livestock, forestry, and fishing. Terms can be short, medium, and long, and loans are directed mainly toward the small and medium operators in

each sector. The institute is also authorized to discount commercial paper, to contract for the marketing of agricultural products, and to invest in firms which have agricultural-related interests. Its liabilities are limited to 25% of its capital plus reserves, which in mid-1975 amounted to \$93 million.

Bank for Agricultural Development (Banco de Desarrollo Agropecuario, BDA)

The BDA is a government organization. It functions as a normal commercial bank but it deals only with agriculturally related industries. The bank can lend to or invest in agro-industrial or fishing industries. In 1974 its assets were \$394 million. Total loans granted during the same year were \$134 million.

Agricultural Credit Fund (ACF)

One of the development and investment funds established in June 1974, the ACF is expected to become a fundamental instrument for the agricultural development in the country. The Fund's initial seed money was \$465 million. It will continue to receive additional allotments from the national budget during 1975. This money will be used to grant loans to the agriculture and livestock sectors through commercial banks, which will process and investigate the credit requests, grant the loan, and then obtain refunds from the Fund. The commercial banks will carry from 20% to 60% of the risk. As of December 1974, the ACF had loaned only \$15.1 million; however, in May 1975 it was reported that this figure had increased to \$263.7 million.

INDUSTRIAL FINANCIAL INSTITUTIONS

The Venezuelan Government is supporting the development of the industrial infrastructure of the country. It is providing important portions of the national income and creating the regulatory framework necessary for the private financial institutions to operate more effectively in the financing of industrial projects.

Venezuelan Development Corporation (CVF)

This government corporation is engaged in lending and investing activities which assist the national development plans. However, CVF's investment policies and budget deficits have strongly limited the ability of the corporation to perform a really useful task. A deficit of \$21 million was partially covered during 1974 with an additional government credit of \$17.7 million. A complete revision of

CVF's policies and procedures was undertaken by the government after the 1974 elections. According to the 1974 Annual Report of the Ministry of Development, since April 1974 the Development Corporation has granted 80 loans valued at \$83.3 million to the following sectors (in millions of U.S. dollars):

Agriculture and fisheries .....	.2
Mining and quarries .....	.3
Manufacturing	37.3
Construction .....	.7
Utilities	29.0
Transports and communications	8.6
Business	6.8
Services .....	.4

The manufacturing and utilities sectors received almost 80% (\$66.3 million) of all of the loans dispersed. In the past, CVF has invested approximately \$442 million in 55 different companies, mainly in the manufacturing sector. During 1974 only \$6.7 million was invested in different projects, including the International Fishing Port of Guiria, \$2.2 million; the Export Industrial Center (CIEPE) construction program, \$900,000; the Grain Drying Equipment Program \$700,000; the Fruit Processing Program, \$900,000; and the Jirahara Hotel, \$2 million. For 1975, the CVF has received loan and investment requests for \$480 million; however, available funds only amount to \$206 million.

Guayana Development Corporation (C.V.G.)

The CVG is responsible for the development of the Guayana region. It has concentrated its investment activities in large mining, steel mill, and hydroelectric projects. Its affiliated companies are CVG-Siderurgica del Orinoco C.A. (SIDOR), the national steel company; and Electrificación Caroni C.A. (EDELCA). The corporation's total assets in 1973 were almost \$1.3 billion. CVG has made extensive use of credits abroad, especially with the Inter-American Development Bank. In accordance with government policies, it is expected that large investments by the CVG in power, steel, and aluminum companies will be financed by the Venezuelan Investment Fund (VIF).

Medium and Small Industry Development Corporation (CORPOINDUSTRIAS)

This government organization provides financial assistance to small and medium-size companies, particularly those firms which are new-to-export. In reality the main focus of CORPOINDUSTRIAS's activities is to generate new equipment. CORPOINDUSTRIAS was established in June 1974. It re-

placed a similar organization known as CONAFIN, which had liabilities of \$880,000. Since the creation of CORPOINDUSTRIAS, \$24.3 million have been granted in 1,527 loans which have created 3,339 new jobs. For 1975 it is planned to approve \$62.5 million which should open up 8,488 new jobs. Among the activities to be financed are construction of small and medium-size industrial plants, purchase of automobiles for use as taxis, purchase of industrial sites, and loans to industrial processors of agricultural and fish products.

The Industrial Bank of Venezuela

Although government-controlled, the bank operates as a normal commercial bank. Its primary purpose is to serve the industrial and business community with a liberal policy for investment and expansion loans. However, although the Industrial Bank lent \$545 million during 1974, only 43% went to the industrial and business community (31.1% industrial and 12% business). The total loans during 1974 increased 9.2% over the 1973 figures.

Industrial Credit Fund

The Credit Fund was established in June 1974 to assist in the financing of industrial development with long- and medium-term loans. It received an allocation of \$465 million in 1974 and additional \$69.7 million in early 1975. Since its creation, the fund has approved \$63 million worth of credits; 63% went for the establishment of new industries; 31% went for the expansion of 12 existing industrial plants; and 6% was used for moving two plants to new locations. This \$63 million is only 11.8% of the available funds. It is expected that the number of loan requests will increase during the latter part of 1975.

Export Development Fund

This Fund was created to help finance industries with export potential and to provide financing to the foreign purchaser. The initial allotment of \$23.3 million was increased to \$34.9 million in 1975. So far, the Fund has granted loans of \$2.1 million (90% of the requested loans). Recently the Fund has expressed interest in financing agricultural exports and extending credit lines for foreign importers of agricultural products.

VENEZUELAN INVESTMENT FUND (VIF)

In 1974, the government created the Venezuelan Investment Fund. This organization receives a high

percentage of the oil income and uses it for investment at home and abroad. The purpose of the Fund is to control the inflationary effects in the economy of this huge money flow and to finance the economic development of Venezuela. The VIF was created with an initial allotment of \$3.02 billion and has continued receiving additional funds throughout 1975. The budgeted share for 1975 will bring the total to \$6.1 billion by the end of the year. As of May 1975, the Fund has already received about \$4.7 billion, including interest on time deposits and loans; however, due to the anticipated decrease in oil revenue, the 1976 budget bill projects no new allocation for the Fund.

Venezuela is severely handicapped by the lack of sufficient numbers of competent and experienced money managers capable of employing the huge amounts of money it is receiving. The head of the VIF is a minister-level appointee who has only a limited staff. Although a good deal of the technical work of the organization is being handled under contract, it is apparent that the vast funds of the organization have not been invested in the most productive manner since the creation of the Fund. A number of banks and finance companies from the U.S. and Europe have been in contact with VIF to offer their services for the management of the fund, but no firm decision has been taken in this regard.

As of December 1974, VIF had almost \$2.6 billion in funds, all of which were in short-term deposits, distributed as follows (in millions of U.S. dollars):

48 hours deposits	217.2
30 days deposits	898.9
90 days deposits	1,111.1
180 days deposits	368.7

VIF's first international operation in 1974 was a loan to the World Bank for \$500 million; \$400 million in U.S. dollars and \$100 million in bolivars. One trade off of this loan was an agreement between the World Bank and VIF that the Bank would serve as an advisor to VIF on certain large projects. An agreement with the Central American countries and Panama for \$500 million partially helped finance the oil purchases of these countries. The third important action taken by the Fund was an agreement with the Central Banks of the Central American countries to provide the necessary funds to permit them to hold 10% to 20% of their coffee crops if prices decline. VIF also agreed to purchase \$40 million in bonds issued by the Central American Bank of Economic Integration (BCIE). Planned activities for 1975 include purchase of 10 cargo vessels for the Venezuelan Navigation Company; investments in steel, aluminum, and electric energy projects; and investments in the petrochemical and oil industries. International activities include

plans to open an Investment Bank, located in the United States or Europe, with an initial capital of \$50 million. The main purpose of the bank will be to receive deposits in Euro-currencies, placing bonds in the international markets, and other banking activities.

THE FINANCE COMPANIES (SOCIEDADES FINANCIERAS)

The "Sociedades Financieras" were established to serve as a source for industrial lending with terms ranging up to 15 years (increased to 20 by the new Banking Law). Maximum foreign ownership in any company is 20%. The majority of the "financieras" have engaged in consumer lending, with a large percentage of their loans financing the purchase of automobiles and travel. However, a tendency to branch out into general industrial loans has been adopted as a result of the increased flexibility of recent regulations. As of December 1974 there were 27 financing companies with a total of 43 branches throughout Venezuela. Their total assets amounted to \$801.3 million, an increase of 37% over 1973. Financial bonds issued by the financieras were valued at \$102 million, up 77.3% over 1973. A large number of financieras are either commercial bank affiliates or are associated with the automobile assembling industry.

One of the principal companies is C.A. Venezolana de Desarrollo, CAVENDES, owned by over 100 foreign and national shareholders, including the World Bank International Finance Corp., the Venezuelan Development Corporation, and Banco Caracas. Other major companies are FINALVEN, partially owned by Chrysler Corporation; Continental de Creditos Mercantiles, CREMERCA, affiliated with Chemical Bank of New York and Bessemer Securities; Adelantos y Creditos C.A. ADRECA, partly owned by First National City Bank of New York; Sociedad Financiera del Centro, affiliated with Irving Trust and Banco del Centro Consolidado.

OTHER PRIVATE FINANCIAL INSTITUTIONS

Leasing Companies

Several companies, generally affiliated with commercial banks and financing companies, are entering the leasing field. ARRENDEQUIPOS (controlled by First National City Bank of New York) leases equipment at 2.5%–3% monthly with a purchase option. Other firms in this activity are Arrendaven and Crediquipos, the latter a financiera specializing in leasing operations. Leasing of land, buildings, and equipment with an option to buy can

also be obtained through the Venezuelan Development Corporation.

Credit Cards

Major credit cards are now in wide use in Venezuela, generally under the auspices of a local bank. The largest is BancUnion card, managed by the Banco Union. Interbank of New York has granted two franchises for its Master Charge cards: one to Credimatico B.N.D. of the Banco Nacional de Descuento B.N.D.; the other to Citicredito. Diners Club, the first card established in the country, operates through several banks, including Banco Mercantil y Agricola, Banco de Maracaibo, Banco Venezolano de Credito, and Banco Caracas. Banco del Centro Consolidado manages the American Express credit card. Carte Blanche card is not affiliated with any local bank.

Insurance Companies

As in other financial sectors, a new Insurance Law was decreed by the government in May 1975. Within 2 years, all insurance companies must be no less than 80% Venezuelan owned—a change from the 51% rule. (Brokerage firms are also affected by this rule.) Minimum capital requirements have been modified. Within 1 year, 40% of insurance covered by obligatory treaties must be reinsured locally, and the right of first refusal must be given to local firms in the excess.

As of December 1974, 41 insurance companies were in operation. Collected net premiums amounted to \$330.3 million; and total paid claims, to \$286.2 million (see table 8).

Serving as an intermediary between the Superintendency and the insurance companies is the Insurance National Council, in which every insurance and reinsurance company, broker or brokerage firm is represented; the Insurance Superintendent represents the government in the council. This organization analyzes the insurance industry, makes recommendations, and serves as advisor to the Executive

Table 8.—Consolidated balances 1974—insurance companies¹

(in millions of U.S. dollars)²

1. Paid-in capital	\$525.4
2. Net worth	\$73.9
3. Net premiums	\$330.3
4. Claims paid	\$286.2
5. Percent relation 3 & 4	87.2%
6. Administration expenses	\$56.6
7. Profits	\$13.5
8. Percent relation 7 & 3	4.09%
9. Investment gains	\$34.0

¹ Totals include 40 insurance companies registered by the Insurance Chamber as of December 1974.

² Exchange rate used: Bs 4.30=U.S. \$1.00.
Source: Venezuelan Insurance Chamber.

Branch. It will also request approval for premium rates and accounting systems to be applied equally by all insurance companies.

EQUIPMENT REQUIREMENTS

The market for all types of business equipment in Venezuela has grown at phenomenal rates over the last 3 years. For example, the market for computers and related equipment grew at an average annual growth rate of 20% between 1971-1974. This type of trend is expected to continue as a result of the expansion of the financial system and the increasing use of microfilm for legal purposes which the recently passed Banking Law makes possible. Imports of office equipment, computers, and related equipment valued at \$29.8 million in 1972 rose to \$54.3 million in 1974. The growth rate in 1973 was 27.5% and 42.9% in 1974. Total sales are expected to reach \$81 million in 1975. During 1973 and 1974 the U.S. market share maintained its traditional position of 41.6%.

Because there are no domestic assembling or manufacturing facilities for business equipment, imports represent total market size. Small and medium-size independent equipment manufacturers and services companies should be able to increase their participation in the market as awareness of their competitive prices grow locally. Market research reveals favorable sales prospects for American manufacturers of the following products:

- Microfilers
- Microfiche equipment
- Microfilm processors
- Microfilm readers
- Microfiche readers
- Small and medium-size computer systems
- Minicomputers
- Data communications systems
- Input/output devices
- Magnetic tape recorders
- OCR devices
- Document scanners
- Disc file storage equipment
- Magnetic tape storage devices
- Magnetic core storage devices
- Keyboard to tape systems
- Document to magnetic tape media converters
- ROM devices
- Sophisticated typewriters
- Electronic calculators
- Photocopying equipment
- Fire and security equipment

In general, financial institutions make their purchases of equipment through local companies, representatives, or agents. The government always calls for bids when buying equipment. Bidders are re-

quired to have a local agent who should register the company with all government organizations which are potential buyers of his equipment. Government organizations normally call for a preselection of bidders and those companies more likely to be able to provide the equipment and technical services requested are invited to bid. A substantial amount of legalized documents from the foreign company and its agent are required and must be presented to each government organization that is considered a potential client. (Venezuela does not have a centralized government purchasing agency.) In addition, successful sales efforts to government agencies require relatively constant attention to the cultivation of important decision makers in each agency.

MICROGRAPHICS EQUIPMENT

The enormous potential of micrographics equipment in the Venezuelan market lies in the fact that up to now so little of it has been used. The new Banking Law authorizes banks to return checks to their clients, with a microfilmed copy for their records which will be acceptable for legal purposes. This is the first time that microfilm has received legal status in Venezuelan Law.

In 1974, the country imported about \$250,000 in equipment and supplies. Trade sources have indicated that imports will probably double in 1975, mainly due to additional uses in filing systems. (This estimate does not consider the recently opened market of check microfilms.)

Eastman-Kodak, known in Venezuela as Foto-Interamericana, has 80% of the market for microfilm equipment with Bell & Howell, Memorex, Quantor, and 3M as U.S. competitors. Agfa of Germany and Fuji of Japan are other foreign competitors. Memorex de Venezuela also leases second hand computer-output microfilm. Among their clients are the Ministry of Finance, Creolo Petroleum Corp., and CADAFE (the state electric company).

About 70% of microfilming equipment in the country is being used by financial institutions, and approximately 25% is used by government institutions such as the Ministries of Justice, Education, Agriculture, and Finance (in its National Statistics Bureau). Only 5% of all the equipment in operation can be found in the industrial sector. About 90% of the micrographics equipment used by financial institutions is in banks. The following are the estimated number of units of micrographics equipment present in Venezuela as of July 1975. The approximate percentage of Eastman-Kodak is also indicated.

	<i>Kodak Share</i>
Rolling microfilers (220)	80%
Flat microfilers (40)	80
Processors (25)	95
Roll readers, 16 and 35 mm. (65)	80
Printing readers (95)	80
Microfiche readers (580)	60

The major users of micrographic equipment are the following banks:

Banco Union, with one Kodak Reliance 700 Microfilmer, two Reliance 600, and one 500. They also use Motormatic and Magnaprint readers, one Proster processor, and a Quantor COM.

Banco de Venezuela has one Reliance 700, two 500, one 450, and 5 portable microfilers for signature control.

Banco de Venezuela has one Reliance 700, two and one Magnaprint reader; portable microfilers are located in all branches of the bank.

The use of magnetic ink characters for checks will probably come later, but there is no indication when this might be done. An important role in the development of this market will be played by the recently established National Microfilm Association, which includes all the major importers of equipment and supplies and is now in the process of inviting end users to join.

COMPUTERS AND RELATED EQUIPMENT

Most Venezuelan banks have installed general purpose computers, I.B.M. 370/135, or N.C.R. Centurions, some with terminals in their offices in Caracas. Banco del Caribe, considered to have one of the best systems, presently has an I.B.M. 370/135 with 40 terminals throughout Caracas and Venezuela. The system was expanded in late 1974 to 77 terminals, with five printers in other cities besides Caracas. The system will then cover all their offices and branches.

Banco de Venezuela, considered the largest commercial bank in the country, operates with two I.B.M. 370/135 and 48 terminals, covering only the Caracas metropolitan area. It plans, however, to install terminals in all of the 86 branches in the system during 1976.

The largest insurance company, Seguros Caracas C.A., presently uses an I.B.M. 370/135 with six terminals within Caracas. Of the nearly 100 financial institutions operating in Venezuela, it is estimated that at least 50% of them are now using large or medium-size computers. The highest percentage of users are the banks. Lack of data about the distribution of minicomputers has made it impossible to determine the percentage being used by financial institutions.

The present computer-population in Venezuela is estimated at 350 medium and large computers and 700 minicomputers, with the market divided among I.B.M., Burroughs, N.C.R., Hewlett-Packard, and others. I.B.M. is estimated to control 75% of the computer market; and Burrough, 65% of the mini-computer market. N.C.R. has approximately 15% of both markets.

Peripheral equipment accounts for approximately 9% of total sales of computers and related equipment, with a growing market for equipment of independent manufacturers competing with the main-frame suppliers. The demand for remote-terminal systems is dominated by the financial institutions and government, with excellent opportunities for high-speed printers and data collection terminals. As information systems are being modernized, sales of OCR devices, document scanners, and keyboard-to-tape equipment should increase. Storage devices are another area in which there are increasing sales opportunities, especially read-only memory (ROM) devices, disc files, magnetic tapes, and cores.

The market for minicomputers is expected to grow at a faster rate than other products, not only because of Venezuela's economic growth, but also because of an increasing awareness of the existence and usefulness of this kind of equipment on the part of those companies and institutions that cannot afford the larger, more expensive computers. Accounting and engineering applications should be the main uses for minicomputers during the next 3 years.

The market for data transmission systems is in the banking, government, and educational sectors. In the industrial sector, only the large oil companies have developed teleprocessing networks. The best potential buyers are the industrial-financial conglomerates. These groups have a tendency to use family management, thus coordinating closely all operations, even though the companies may technically be independent. It is common to find affiliated companies providing computer services to all members of the group on a time-sharing basis. The normal transmission speed for nontechnical data is 2400 bands over leased telephone lines. The growing need for computer time-sharing gives foreign companies good opportunities to provide consulting and training services. In addition to the financial institutions, other major end users of computer equipment are: Retail department stores, supermarket chains, oil companies, universities, and research institutes.

The Venezuelan Government is another important end user. According to the Computer Committee of the Public Administration Commission, government computer purchases and rentals are distributed among the companies operating in Vene-

zuela as follows: I.B.M.—88.1%; Burrough—5.2%; MAI—3.8%; N.C.R.—1.9%, and other companies—1%. Major end users are the National Housing Institute, Venezuelan Central Bank, Bureau of the Census and Statistics, etc.

Computer and data processing services companies are the major nongovernmental end users of computer and related equipment. There are several independent companies using their own or rented equipment; some of them are: Compania Nacional de Computacion C.N.C., Centrol de Proceso Electronica de Datos S.A., Teledatos C.A., Calculo y Programacion Electronica C.A. CYPECA and DATACOMP. The latter is a Venezuelan company which recently absorbed U.C.C. de Venezuela, Venezuela, which was owned by University Computing Co. Another important service company is FINALDATA, affiliated with the finance company FINALVEN and, therefore, partially owned by Chrysler Financial Corp.

The Venezuelan market uses almost exclusively American made business equipment, even though certain European manufacturers are finding an increasing market for their products. Some of them are Phillips of the Netherlands and Olivetti from Italy. Olivetti is extensively promoting their word processing centers but purchasers, if any, are unknown. American suppliers with subsidiaries or joint operations in Venezuela include: I.B.M., Burroughs, N.C.R., Hewlett-Packard, Honeywell, and Univac. Basic Four and Digital Equipment Corp. are represented by agents.

BUSINESS EQUIPMENT

Typewriters

The market share for U.S. typewriters has been very low in the last few years, 11.6% in 1972 and 6% in 1973.

Of the estimated \$5.1 million typewriters imported during 1973, \$1.6 million were from Germany, \$600,000 from Japan, \$620,000 from Italy, \$610,000 from Brazil, \$470,000 from Sweden, and \$460,000 from the Netherlands. The remaining share was distributed among countries such as Colombia, United Kingdom, Spain, and Argentina. During 1974 imports rose to \$8.8 million with 16.1% or \$1.4 million coming from the United States. The market for the most sophisticated electric typewriters is dominated by Remington and I.B.M., followed by Royal and Smith-Corona. Venezuela has no domestic typewriter manufacturing or assembling facilities.

Adding, Calculating, and Accounting Machines

This \$14 million market (1974) is expected to reach \$18 million during 1975 as a result of the boom for pocket electronic calculators. Hewlett-Packard, who reportedly is selling about 35,000 units per year, have reportedly cornered the market even though their prices are higher than those of their competitors. The sophistication of their calculators have given them an edge in the university, educational, scientific, and technical markets. Other U.S. companies selling in this sector through local agents are National Semiconductor (Novus), Comptometer Corp. (Victor), Tel10em Inc. (Brainmate), Litton Industries (Monroe), and Singer-Friden. The estimated U.S. market share for these machines is 34%, followed by Japan with 14%, Germany and Sweden, both with 8%, and Italy with 7%; the rest of the market is distributed among other countries, such as the United Kingdom, Mexico, Brazil, France, Netherlands, Canada, Argentina, etc.

Among the best known brands from other countries are: Toshiba (Japan), Adler (Germany), and Facit (Sweden).

PHOTOCOPYING EQUIPMENT

Photocopying equipment is another area in which U.S. suppliers have been quite successful. For example, since 1974, out of a total of \$6.9 million in equipment and parts sold, the U.S. share was 83.3%. In general, photocopying equipment is supplied by companies such as Xerox Corp. (which has approximately 70% of the market), 3M, and Nashua.

FIRE SAFETY EQUIPMENT

In the past, construction regulations included some fire safety requirements, specifically in high-rise buildings; but due to the lack of enforcement by the appropriate authorities, only the most basic and obvious preventive procedures have been employed.

In 1974, decree 46 established tough new standards for fire prevention and equipment. Basically, the new standards have been modeled after U.S. standards as established by U.S. National Fire Prevention Association and the Occupation Safety/Health Code. A new department in the Ministry of Development has been set up to enforce fire regulations throughout the country. It has been estimated in Caracas alone that 36,000 establishments will have to install some kind of fire protection system under the terms of the new law. In Cuidad Bolivar, a city located in Guayana state,

the fire chief has estimated that 60% of the commercial establishments in the city can not physically meet the new standards. Local manufacturing is limited to hoses, extinguishers, auxiliary power generators, and pumps. Assembly of fire extinguishers is based on a design by U.S. manufacturer Walter Kidd. Imports of alarm systems, intercommunication equipment, heat and smoke sensing devices, special types of fire extinguishers, etc., have shown a steady increase during the last 3 years. Dynamic growth is projected for the coming years.

SECURITY EQUIPMENT

In the field of security equipment, especially safes and safe doors, the U.S. manufacturers have been well represented in the market. During 1973 Venezuela imported almost \$1.1 million in all types of safes, security boxes, and safe doors; about \$41.4 million was imported from the U.S. The main users of this equipment were the financial institutions. Political instability over the past 10 years and resulting attacks on banks, private offices, armored cars, and private buildings lead to extensive use of security systems. In the area of electric and electronic alarms and security intercommunication systems, U.S. and Japanese equipment is most popular. The major armored car service, Servicio Panamericano de Proteccion C.A., is a division of Brink's, Inc. Its services include transportation of currency and documents, safe box rentals, and security guard service. The firm also acts as agent and distributor for alarms and security devices for several U.S. manufacturers.

*Table 9.—Interest rates in Venezuelan financial markets
June 1975*

Banking	
Savings deposits	4.0
Maximum term deposits ¹	8.0
Active interest	
First class	9.5
Medium class	10.0
Lower class	10.0
Private external loans	9.0
Deposit Certificates	
From 6 months to 5 years ²	7.0 to 8.0
Mortgage	
Cedulas Hipotecarias ²	8.0
Mortgages, mortgage banks (loans)	10.0 to 15.5 ³
Private mortgages	12.0 ³
Savings and Loan Associations	
Deposits	7.0
Loans	8.5
Bonds	
Private	9.75 to 10.3
Internal debt ²	7.49 plus .01
External debt (public)	8.0
External debt (International organizations)	9.0
Finance Companies	
Tax exempt bonds	8.0
Nonexempt bonds	9.3
Consumer loans	18.0
Industrial loans	11.0 ⁴
Monetary Market	
Bank acceptances, 48 hours to	
3 months ⁵	5.50 to 6.0
3 months ⁶	9.0
6 months ⁶	9.5
12 months ⁶	9.8
18 months ⁶	10.0

¹ Over Bs 250,000 and over 1 year.

² Tax exempt.

³ Plus commissions.

⁴ Plus 3% commission.

⁵ For over Bs 1 million operations.

⁶ For over Bs 250,000 operations.

Source: Confidential Report, Issue No. 535, dated 6/16/75.

13 Health Care

There has been considerable public concern in Venezuela regarding the quality of existing medical facilities and the nationalized health program generally. As a result, Venezuelan public care programs are undergoing considerable expansion and change. The Government has plans for significant increases in the numbers of hospitals, clinics, and health centers over the period 1975-1980. The significant expenditures planned in the field of public health care will mean sales opportunities for U.S. suppliers of health products.

U.S. manufacturers of medical equipment and supplies dominate the Venezuelan market with approximately 50% of total equipment imports. Thus, the planned expansions indicate a growing market for U.S. suppliers. The company that adopts a comprehensive and well-financed marketing strategy in Venezuela will almost certainly find growing sales opportunities.

MEDICAL SERVICES

The Ministry of Public Health operates hospitals and lesser clinical medical facilities nationwide, and coordinates the planning of medical services in each of the states and the Federal District. Each state and the Federal District has a Commissioner of Public Health who is responsible for all public health planning and programming in his area. His coordination with the Federal Ministry of Public Health is via the coordinated budgeting process which takes account of all federal and joint state/federal activities. The states' planning, in turn, is coordinated with municipalities. The medical service facilities of the universities and autonomous institutions such as the Corporacion Venezolano de Guayana (CVG) come under the auspices of the Ministry of Public Health.

The Social Security Institute also operates a nationwide system of medical care facilities which are especially designed for workers who pay into the social security system and for their families. The Ministry of Defense provides medical services to

members of the armed forces and their families. Planning for new medical facilities by the Institute and the Ministry of Defense appears to be substantially isolated from that done by the Ministry of Public Health.

Private medical facilities are operated by profit-making and charitable organizations. The petroleum companies also have operated their own medical facilities and, according to the Ministry of Public Health, will continue to do so following nationalization of the oil companies. The 1974 distribution of hospitals and beds by type of organization is indicated in tables 1 and 2.

It is important to note that while the planning of a new medical facility falls within the responsibility of the organization which is to operate that facility, the construction of federally-owned medical facilities is a function of the Ministry of Public Works.

In July 1975, the President created a National Commission on Public Health to advise him on the best way to create a unified National Health Service responsible for all public health care services. The

Table 1.—Hospitals and beds by organization—1974

Organization	Hospitals		Beds	
	Num-ber	% of total	Num-ber	% of total
Public				
<i>Federal</i>				
Ministry of Public Health	96	27.04	20,271	59.16
Social Security Inst.	10	5.35	2,877	8.40
Ministry of Defense	5	1.41	1,315	3.84
<i>State</i>	50	14.08	2,091	6.10
<i>Municipal</i>	12	3.39	2,385	6.96
Private				
<i>Charitable</i>	8	2.25	1,083	3.16
<i>Industrial</i>	11	3.10	528	1.54
<i>Private</i>	154	43.38	3,713	10.84
Total	355	100%	34,263	100%

Source: Ministry of Public Health.

Table 2.—Number of hospitals and beds according to type and operator—1973-74

	Ministry of Health	States	Social Security	Ministry of Defense	Cities	Charity organiza- tions	Oil com- panies	Private clinics	Total
<i>General</i>									
Hospitals									
1973	72	48	19	5	12	8	12	132	308
1974	72	48	19	5	12	8	11	142	317
Beds									
1973	13,967	1,883	2,877	1,315	2,445	1,033	570	2,306	26,396
1974	14,100	1,961	2,877	1,315	2,385	1,083	528	2,413	26,662
<i>Tuberculosis</i>									
Hospitals									
1973	11	1	—	—	—	—	—	—	12
1974	11	1	—	—	—	—	—	—	—
Beds									
1973	2,213	50	—	—	—	—	—	—	2,263
1974	2,183	50	—	—	—	—	—	—	2,233
<i>Mental</i>									
Hospitals									
1973	11	1	—	—	—	—	—	12	24
1974	11	1	—	—	—	—	—	12	24
Beds									
1973	3,778	80	—	—	—	—	—	1,300	5,158
1974	3,388	80	—	—	—	—	—	1,300	4,768
<i>Leprosy</i>									
Hospitals									
1973	2	—	—	—	—	—	—	—	2
1974	2	—	—	—	—	—	—	—	2
Beds									
1973	600	—	—	—	—	—	—	—	600
1974	600	—	—	—	—	—	—	—	600
<i>Total hospitals</i>									
1973	96	50	19	5	12	8	12	144	346
1974	96	60	19	5	12	8	11	154	355
<i>Total beds</i>									
1973	20,558	2,013	2,877	1,315	2,445	1,033	570	3,606	34,417
1974	20,271	2,091	2,877	1,315	2,385	1,083	528	3,713	34,263

Source: Ministry of Health.

decision regarding the ultimate organization is not expected to be resolved before 1977. In the meantime, both the Ministry of Public Health and the Social Security Institute are proceeding with their individual expansion plans.

Medical care in Venezuela is highly concentrated as indicated in table 3 which shows the distribution of doctors nationwide. In this table, it is notable that the Federal District and its surrounding area, which includes the city of Caracas, has over 42% of all doctors. The state of Zulia, the location of Maracaibo, has nearly 14% of all medical doctors. Hospital bed capacity by type of service and geographical area is indicated in table 4, while table 5 shows movement of patients in public health hospitals.

Although many Venezuelan doctors have studied in the United States, the preferred location for ad-

vanced study, medical practice cannot be said to be on the highest technical level. This is particularly true in public health facilities, not so much due to the physicians' credentials but to the lack of adequate technical support. Although there is an increasing awareness of the problem, the fact remains that the country's medical services are severely debilitated by the lack of adequate maintenance and repair capabilities for the professional equipment. There is apparently a lack of routine maintenance programs in public medical facilities, a problem further aggravated by the shortage of trained medical technicians and maintenance personnel. The Ministry of Public Health operates a training program for maintenance personnel and technicians through the National Center for Hospital Maintenance and Engineering. The center is a joint creation

Table 3.—Number of doctors and inhabitants per doctor by federal entity—1974

State	Number of doctors	Percent distribution	Number of inhabitants per doctor
Federal District and Sucre District of Miranda .	5,539	42.55	543
Anzoategui	355	2.73	1,599
Apure	83	.64	2,174
Aragua	350	2.69	1,409
Barinas	123	.94	1,819
Bolivar	359	2.76	1,337
Carabobo	816	6.27	715
Cojedes	76	.58	1,389
Falcon	295	2.27	1,524
Guarico	168	1.29	2,419
Lara	571	4.39	1,188
Merida	559	4.29	662
Miranda (without Sucre District)	235	1.81	1,106
Monagas	239	1.84	1,473
Nueva Esparta	117	.90	1,113
Portuguesa	158	1.22	2,095
Sucre	289	2.22	1,864
Tachira	404	3.10	1,313
Trujillo	313	2.40	1,313
Yaracuy	115	.88	2,134
Zulia	1,799	13.82	880
Amazon Territory	25	.19	537
Delta Amacuro Territory	29	.22	1,202
Total	13,017	100.00	922

Source: Ministry of Public Health.

of the Ministry and the Pan American Health Organization. It is planning to set up nine regional training centers for maintenance and repair training.

The Office of Comptroller General insures that the government gets what it pays for in the way of equipment of all types. Agents from the Comptroller's office are present for virtually all deliveries of equipment to government agencies and may perform operational acceptance tests to determine that the delivery is complete and properly operating. Another function of the Comptroller is to stimulate all government agencies to develop adequate maintenance procedures for new equipment. All operating instructions, faceplate information, etc., are usually required to be in Spanish.

The profit-making health care organization, i.e., private hospitals and clinics, are provided better services by the equipment vendors, but, they too, feel the shortage of trained personnel. Private institutions tend to serve a more affluent patient clientele. Physicians usually are affiliated with both public and private institutions. Trips to the United States for special medical services are not uncommon among more affluent patients.

EXPANSION PLANS FOR MEDICAL FACILITIES

The most ambitious plan for the expansion of medical service facilities is that of the Ministry of Public Health. It is planning to add over 11,000 new beds to its system in the 5-year period 1975-1980. Table 6 shows the number of hospitals operated by the Ministry in 1975, and the number of new hospitals to be constructed, classified according to bed capacity. The number of new beds includes those to be added as a result of remodeling existing hospitals as well as those to be added through new construction. The total program is expected to cost \$446 million.

In 1974, the Ministry of Public Health operated over 2,700 medical-care facilities such as dispensaries, outpatient clinics, and health centers. They are generally not considered as hospitals. According to the Ministry's plans issued in March 1975, around 3,600 of these units are to be put into operation in the 1975-1979 period.

In addition to the above plans, the Social Security Institute plans to construct nine new hospitals with a total capacity of 1,750 new beds (see table 7). Also planned is the construction of 11 ambulatory health clinics. The budget requested for the Social Security program approaches \$70 million.

Trade sources question the Government's ability to carry out such an ambitious building program. Experience indicates that it requires 12-18 months to build a small hospital, 30 months for a medium-size hospital, 40 months for a 500-bed hospital, etc. To complete this program within the 5 year time frame, the Government must accelerate the present pace of its building program (there were about seven hospitals under construction in mid 1975). Another inhibiting factor has been the frequent changes in leadership of the Ministry of Public Health. Thus, the Ministry's building plan should be interpreted as a target, one that may not be implemented in every detail over the 5-year plan period. The Social Security Institute's program, proposed in mid-1975, was not fully approved at this writing.

The Government has adopted a policy of providing general medical services through its hospitals in order to broaden the benefits of each hospital to its surrounding area. Thus, some specialized hospitals such as tuberculosis and mental hospitals are being converted into general hospitals. The exception to this rule is maternity hospitals, which will remain specialized.

Trade sources have estimated each new hospital bed represents an investment in equipment of between \$12,000 and \$14,000. One estimate from the Ministry of Public Health puts the figure in the \$7-9,000 range. Both estimates apply to hospitals

Table 4.—National normal maximum capacity by beds of various services—1973-74

	Obstetrics		Surgery		General Medicine		Pediatrics		T.B.		Psychiatry		Leprosy		Others		Total	
	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974
Metropolitan Area	1,476	1,476	3,433	3,433	2,080	2,080	1,308	1,308	536	536	685	685	300	300	300	300	10,236	10,236
Federal District	170	170	104	104	117	117	145	145	182	182	1,045	1,045	—	—	30	30	1,802	1,802
Central Zone																		
Apure	32	32	36	36	36	36	41	43	72	72	20	20	—	—	30	30	267	271
Aragua	245	245	306	306	234	234	230	230	40	40	75	75	—	—	72	72	1,302	1,302
Carabobo	408	408	375	375	344	344	330	330	180	180	1,800	1,800	—	—	152	152	3,559	3,559
Cojedes	43	43	24	24	37	37	40	40	50	50	—	—	—	—	8	8	202	202
Guarico	139	139	148	148	146	146	117	117	—	—	—	—	—	—	39	39	539	539
Amazon Territory	12	13	10	17	16	22	13	13	—	—	—	—	—	—	—	—	50	65
Western-Central Zone																		
Falcon	183	183	166	166	158	158	181	181	72	72	80	80	—	—	13	53	853	896
Lara	280	334	302	274	274	304	304	211	211	313	313	—	—	50	146	1,734	1,881	
Portuguesa	99	99	63	63	78	78	131	131	—	—	—	—	—	—	53	53	424	424
Yaracuy	120	212	87	84	94	110	132	137	—	—	200	200	—	—	36	36	649	633
Eastern Zone																		
Anzoategui	315	315	202	202	277	277	266	286	—	—	—	—	—	—	42	27	1,212	1,107
Bolivar	205	202	292	288	237	233	267	263	300	300	160	160	—	—	113	135	1,574	1,561
Vonagas	153	148	128	108	149	130	189	174	60	60	170	170	—	—	16	26	365	736
Nva. Esparta	46	46	64	64	31	31	44	44	—	—	—	—	—	—	34	34	219	319
Sucre	221	222	183	187	184	186	242	248	360	360	—	—	—	—	34	34	1,124	1,137
Delta Amacuro Territory	32	32	28	28	28	28	32	32	—	—	—	—	—	—	—	—	120	120
Western Zone																		
Barinas	36	36	33	33	58	58	46	46	—	—	—	—	—	—	35	35	208	208
Merida	143	143	139	139	270	270	178	178	—	—	—	—	—	—	340	334	1,040	1,064
Tuchira	324	324	195	195	309	309	272	272	140	140	150	150	—	—	73	26	1,463	1,266
Trujillo	182	194	177	169	206	199	191	219	46	46	48	120	—	—	93	93	1,017	1,017
Zulia	589	589	880	880	573	573	661	631	472	442	500	260	300	300	124	124	4,119	3,339
Total	5,453	5,514	7,445	7,441	5,906	5,904	5,482	5,459	2,623	2,688	5,318	4,928	600	600	1,736	1,861	34,530	34,263

Table 5.—Movement of patients in public health hospitals and health centers—1973-74¹

	Days hospitalized	Entering	Leaving	Daily average beds occupied	Average stay	Percent utilized	Budgeted capacity
<i>Western Zone</i>							
1973	1,118,772	136,525	136,431	3,065	8	85	3,608
1974	1,159,412	139,613	137,129	3,176	8	83	3,811
<i>West Central Zone</i>							
1973	515,900	70,145	70,073	1,413	7	82	1,730
1974	540,606	74,356	73,824	1,421	7	83	1,780
<i>Central Zone</i>							
1973	562,242	70,185	79,193	1,540	7	85	1,811
1974	588,804	79,824	78,876	1,613	7	82	1,973
<i>Eastern Zone</i>							
1973	669,172	87,887	87,886	1,833	8	75	2,456
1974	684,120	90,156	88,836	1,874	8	73	2,583
<i>Metropolitan Zone</i>							
1973	37,250	6,491	6,420	102	6	68	150
1974	55,832	12,480	12,108	180	5	42	425
<i>Total</i>							
1973	2,003,336	380,233	380,003	7,954	8	82	9,754
1974	3,028,864	396,629	390,773	8,264	8	78	10,572

¹ 1974 figures preliminary.
Source: Ministry of Public Health.

Table 6.—Existing hospitals and new hospitals planned by the Ministry of Public Health—1975-1980

No. of beds	No. of existing hospitals (1975)	No. of hospitals to be added (1975-1980)
Up to 20	18	11
21- 50	51	21
51- 100	24	11
101- 200	20	8
201- 300	14	7
301- 400	5	6
401- 500	7	7
501- 700	3	—
701-1000	4	3
1001-2000	1	3
Total	147	77

Source: Ministry of Public Health.

Table 7.—Social Security System planned hospital expansion, proposed July 1975

Location	Number of beds	Cost (million Bs)
East Caracas	200	32
Guarenas	200	26
Maracaibo	400 ¹	52
Barquisimeto	200	26
Puerto La Cruz, Barcelona ..	200	26
Valera	150	20
Maracay	200	26
Punto Fijo	200	26
Total	1,750	234

¹ 2 units 200 beds each.
Source: El Universal, July 31, 1975.

of 100 beds or more, with a higher investment per bed in larger hospitals. A conservative estimate of the market for equipment would be between \$100 million and \$125 million in the next 5 years, for these two programs.

Private, industrial, and charitable hospitals are considered to represent some 25% of the total market for equipment in Venezuela. However, no specific plans for new construction of these types of hospitals are known at the present time, and they are not expected to grow dramatically.

There are needs for practically every type of medical equipment. One indication of the types of electro-medical equipment which are preferred is the list of such equipment presently operated by the Ministry of Health (see table 8). This inventory of electro-medical equipment was completed in mid 1975. Other indications of preferred equipment come from the experience of U.S. companies participating in Medequipos 75, an exhibition of medical equipment in Caracas sponsored by the U.S. Department of Commerce in June 1975. Table 9 is a listing of advanced medical equipment with the sales potential of each as assessed by Venezuelan trade sources. The reported results of the exhibitors are indicated on this listing.

There is no production of medical equipment in Venezuela, nor does there appear to be any definite plan for this in the near future. In the medical field there is a fair amount of production of hospital furniture and some beds and examining tables are manufactured. In addition, there is reportedly one company that is beginning to produce disposables.

Contacts within the Ministry of Health mentioned a feasibility study conducted by the Ecuadorian Government on the production of medical equipment for the Andean Common Market. This study was to be reviewed by the United Nations in 1975. The Ministry believes that production of basic medical equipment in Venezuela is feasible, except for equipment of electronic or electrical nature. However, there appears to be no specific plan to promote this at

Table 8.—Inventory of electromedical equipment operated by Ministry of Public Health—1975

Cardiological	
Electrocardiographs	200
Phonocardiographs	20
Ballistocardiographs	25
Defibrillators	35
Pacemakers	20
Cardioversion units	15
Intensive care instrument units: cardio tachometers, monitors of pressure and pulse, alarm registers, etc.	217
Chart records	25
Angiocardiograph systems	8
General surgery	
Electrosurgical units	80
Anesthesia equipment	200
Special light sources	90
Cardio/pulmonary exploration	
Equipment	8
Pulmonary analyzers	10
Nitrogen analyzers	8
Oxygen meters	4
Laboratory	
Photocolorimeters	150
Flame photometers	37
Acidity analyzers	20
Automatic blood analyzers	10
Osmometers	15
Blood chemistry equipment	20
Electrophoresis units	20
Fluorimeters	8
Spectrophotometers	10
Spectrocolorimeters	6
Refrigerated centrifuges	25
Micro centrifuges	115
Table top centrifuges	70
Centrifuge types 1 & 2	100
Clinical agitators	80
Neurological	
Electroencephalographs	30
Electroshock equipment	20
Physical medicine	
Diathermy units	50
Electrodiagnostic units	10
Electrotherapy units	25
Ultraviolet and infrared lamps	50
Audiometers	15
General medicine and other specialties	
Suction and drainage units	360
Units for suction and anesthesia	40
Incubators	250
Respirators	90
Inhalers	60
Pumps (extra corporeal)	10
Dialysis units	18

the present time. The Ministry did indicate an interest in talking with U.S. companies interested in joint ventures, as did several Venezuelan medical equipment distributors.

Table 9.—Medical products rated by sales potential

Highest sales potential	
Defibrillators*	
Implantable pacemakers	
Central station intensive care systems	
Bedside intensive care systems	
Electrocardiographs*	
Phonocardiographs	
Cardiotachometers	
Intracardiac catheters	
Cardioversion systems consisting of defibrillator, recorder, oscilloscope, and amplifier	
Computer programs (software) for EKG analysis	
Nuclear equipment for diagnosing lung perfusion	
Heart-lung machines	
Surgical pacemakers	
Catheters*	
Suction equipment for use with vacuum piping systems	
Anesthetic gas evacuation systems	
X-ray equipment, including mobile units*	
Central station patient monitoring systems*	
Bedside patient monitoring systems*	
Portable resuscitator/inhalator/aspirator units	
Radio-isotopic chromatographs	
Gas chromatographs	
Oscilloscopes	
Good sales potential	
Infant intensive care monitors	
Portable intensive care incubators*	
Electrosurgical units, including electrocoagulation	
Blood flowmeters*	
Blood pressure monitors, including automatic	
Blood volume analyzers/monitors, including isotopic*	
Anesthesia equipment*	
Electronic stethoscopes and amplifiers	
Environmental tents	
Electronic blood pressure indicators	
Computers for patient monitoring systems	
Computers for planning radiotherapy treatment	
Freezing point osmometers	
Automated blood cell counters	
Centrifuges*	
Automated sample analyzers	
Computer systems for: cardiovascular research; neurological studies; monitoring of automated laboratory instrumentation; on-line monitoring of cardiac output; etc.	
Mobile patient/population testing systems*	
Mobile laboratory test systems	
X-ray units for mass chest surveys	
Fluorimeters for field detection of porphyrins by paramedical personnel	
Average sales potential	
Cardiac output analyzers/computers	
External pressure circulatory assist systems for myocardial infarcts	
Fluorimeters for detection of lead poisoning	
Laser surgical instruments	
Gamma scintillation cameras	
Mechanical isotope scanners	
Pulse height analyzers	
Ultrasonic physiotherapy equipment*	
Fluoroscopic image intensifier systems for television or mirror viewing	
Liquid chromatographs	
Atomic absorption/emission spectrophotometers	

* Sold well according to reports of exhibitors in U.S. Medical Exhibition held in Caracas June 1975.

MARKETING IN THE SECTOR

It is estimated that the public institutions account for 75% to 80% of the total market for medical equipment in Venezuela. With only minor exceptions, all public health agencies advertise for bids through their procurement system. They are required by law to advertise on purchases valued at \$1,200 or more. The Social Security Institute tends to have more numerous, smaller bids than the Ministry which has fewer but larger bid requests. Award of bids is based on cost, service provided, and delivery time.

For equipment in new hospitals the planning offices in each of the major entities are the most important in the equipment specification process. However, as mentioned earlier, the Ministry of Public Works (MOP) is responsible for the actual construction of new hospitals and they play an important role in determining the specifications for fixed equipment in new hospitals. The division of equipment by fixed or non-fixed category is vague, so the newcomer to the market may find it confusing. For example, various types of examination tables, and even some portable equipment, is the procurement responsibility of the MOP; large X-ray machines are, at times, included. In general, the Ministry of Health or the Social Security Institute has the controlling voice on the specification of major equipment.

For specifying the purchase of new equipment for existing hospitals, the opinions and preferences of the professional staff carry special weight. A not uncommon practice is for physicians to specify equipment in such a way that only one manufacturer's equipment may be favored. Thus, an important part of selling medical equipment to the public market is establishing contracts with individual doctors and paying close attention to the needs of their private clinics, since most doctors divide their time between public and private practice.

The problem mentioned most by sellers and buyers of medical equipment is the poor maintenance and service facilities available. There were 130 agents and distributors of medical equipment identified in Venezuela for Medequipos 75. Probably not more than 25-30 of these have satisfactory service departments. The problem relates to a lack of trained personnel, inadequate supplies of spare parts and a lack of operational and repair manuals written in

Spanish. It is strongly recommended that companies seeking to establish a successful presence in Venezuela should provide Spanish language technical material together with periodic training for repair and maintenance personnel.

Current practice is for the larger representatives to provide on-site service or perform repair work in their own shops. However, for major repairs the equipment may be returned to the manufacturer. A few companies may provide loan equipment to the end user when theirs must be returned. Smaller representatives may offer no service at all, at times depending on a lower selling price to achieve sales.

U.S. firms are generally rated higher than European or Japanese competitors in maintaining shorter delivery times and adequate spare parts inventory. However, according to one of the largest equipment dealers, the Japanese have recently begun to emphasize the need for better servicing capability in their distributors. One marketing strategy followed by some U.S. firms has been the donation of pieces of equipment to the Center for Hospital Maintenance and Engineering. These units are used to train repair and maintenance technicians. Since the Center is actively promoting the idea that medical equipment should not be imported if it cannot be serviced such a strategy on the part of the suppliers facilitates their market access.

Normal selling price is the landed value of the goods (FOB factory plus shipping, insurance, and duties) plus a 25-40% mark-up. The mark-up varies according to the equipment cost, sales expenses anticipated and amount of servicing it is likely to require. In addition, the mark-up may be reduced for large sales. Advertising expenses are borne by the representative, but this is normally minimal as a percent of sales.

Delivery from the factory in the United States varies between 90-180 days. One distributor mentioned that normal delivery from Europe is 6 months to a year for some items, but that delivery terms by Japanese firms are about the same as U.S. firms. Payment is usually by letter of credit for equipment shipped from the factory. Public entities in Venezuela are constitutionally prohibited from accepting suppliers' credits. However, it is not uncommon for public entities to delay payment for 120-180 days. Nonetheless, sales on open account with public entities are not uncommon. Private entities usually pay in 30 days.

14 Tourism

DOMESTIC TOURISM

The Government of Venezuela is paying increased attention to the tourist industry, as evidenced by the inclusion of tourist development activities in the Five Year National Development Plan for the first time. Planning for the tourist industry is carried out by the recently formed Corporation of Tourism or Corpoturismo, a government entity. The Corporation has an office in New York and is planning to set up two others in Canada and Europe. These will be unified offices with responsibilities for trade, cultural information, and tourism.

Although Corpoturismo is aware that Venezuela's balance of payments on the tourism account is in deficit, it is not undertaking any extensive new programs for the promotion of international travel to Venezuela.

In the past, international promotions of tourism to Venezuela have concentrated on its Caribbean sun and swim image. Corpoturismo is changing its emphasis to project a picture of the whole country—its people, culture, and industrial possibilities. Thus, there will be less emphasis on the strictly tourist attractions. The Venezuelan Government has recently decreed that all foreign visitors must acquire a visa at a Venezuelan consulate prior to arrival in the country, as well as go through involved health and customs formalities at Maiquetia International Airport. These are further indications that oil-rich Venezuela does not presently consider tourism of great significance as a provider of foreign exchange. This attitude reinforces the overall desire of government planners to develop tourism in a measured and programmed manner toward the long-range good of the country.

With the sharp surge in oil revenues and the economy, the Venezuelan Government has shifted top priority to the needs of internal tourism and the recreational requirements of lower-income classes. In mid-1975 Corpoturismo announced 40 projects for development of recreational facilities for tourism. These include construction of special

docks for cruise ships in Maracaibo's port, restoration of historic sites, creation of parks and public beaches, a petroleum museum, folklore and artisan centers. The \$18 million cost of these projects will be shared with the state governments. Corpoturismo's total budget in 1975 was \$11.6 million, down from \$13.7 million in 1974. The 1974 total was inflated by non-recurring special credits for debt reduction.

The Government operates nine hotels outside Caracas with a total of 1,072 rooms. They are priced for the middle and upper-middle-class clientele. Until recently, these were operated by the National Corporation of Hotels of Tourism or Conahotu. President Perez issued orders to close Conahotu in January 1976 to conserve funds. Responsibility for hotel operation was shifted to Corpoturismo which plans to rent them to private hotel operators. According to an unofficial source, only one hotel in the chain made a profit in 1974. There are no plans for increasing the number of government-owned hotels. The Government wants to get out of the hotel business altogether and leave it to the private sector. Foreign firms will be allowed to operate fully-owned hotels in Venezuela. The Government does, however, offer incentives for the construction, amplification and renovation of tourist accommodations. These include tax exoneration (15 years for new construction, less for improvements) and financial assistance. The Government, according to Corpoturismo, is considering the establishment of a Fund for Tourism Development. If approved, the Fund would provide guaranties to private banks for loans to organizations involved in developing the tourist industry. The banks would make the loan decisions and administer the loans.

Corpoturismo has estimated that income generated by international tourism amounted to \$49.6 million in 1970; it rose to \$177 million in 1974. The figure was expected to be \$196 million in 1975 and is projected to reach \$468 million in 1980.

Although cruise ships are the most popular means of getting to Venezuela (see table 1), these cruise passengers spend only one night or less in the country. Thus, the important carrier for the Vene-

Table 1.—International tourism in Venezuela, 1970–74

Year	Tourists	Percent change	Cruise passengers	Air passengers	Passengers in transit
1970	116,962	—	79,840	22,232	20,953
1971	114,085	-2	82,060	22,390	26,303
1972	170,836	50	123,312	28,651	24,479
1973	284,603	67	168,728	30,794	26,990
1974	425,962	50	168,803	31,352	31,496

Source: Venezuelan Association of Tourist and Travel Agents (AVAVIT) and Venezuelan Ministry of Communications.

zuelan tourist industry are the airlines. It is estimated that the average tourist spends 7 days in Venezuela. The Venezuelan Association of Tourist and Travel Agents (AVAVIT) estimates that 70% of all international visitors to Venezuela come on business.

In 1974, 93% of all international air passengers moved on scheduled flights, the remainder by non-scheduled carriers. Forty-one percent of all international air passengers traveled on Viasa, the government-owned airline, in 1974. Charters are seldom used, reportedly because Viasa is against them. Foreign airlines are not permitted to offer special cut-rate fares. Maiguétia, the airport serving Caracas, was the point of arrival for 94% of all international air passengers to Venezuela in 1974; 5% landed at Maracaibo.

Caracas

Caracas is the base for most tourists visiting Venezuela. It is the country's capital and most important cultural and commercial center. The Government is also trying to create centers of tourism development in the State of Zulia, around Maracaibo, and on Margarita Island. In Caracas, hotel rooms are at a premium. There does not appear to be a significant amount of hotel construction planned, and what is planned will take years to complete. Caracas hotels average 90% occupancy thanks to the steady stream of foreign businessmen in search of Petrodollars. Hotel industry analysts indicate the Caracas hotel room shortage must first be solved before Venezuela can look to making significant gains in attracting foreign tourists. Before the foreign tourist visits the attractions in the interior he wants to visit the capital.

Two planned projects stand out. The Hotel Hyatt is to be 52 stories high, with 120,000 square meters of floor space, 1,103 rooms and additional facilities including a theater, conference rooms, etc. Total cost is expected to be \$70 million. The Hotel Melia is expected to include 460 rooms. There is also some discussion of a possible expansion of the Hotel Tamanaco, but apparently no definite plan as yet. Until the Caracas Hotel capacity drastically increases, some in the industry believe that the 24-hour cruise ship visits should be promoted.

Maracaibo

According to one source, Maracaibo will add 1,500 new hotel rooms by 1977. The Hotel del Lago in Maracaibo is planning an expansion of 160 rooms to bring its capacity to 400 rooms. This hotel is owned by Conahotu and managed by Intercontinental Hotels. According to the manager, it maintains a 93% occupancy rate, but this is primarily commercial and the weekend occupancy rate is lower. It is counting on an increased flow of visitors to maintain its occupancy rate when its addition is finished in 1979. This increase may be generated by the tourist promotion activities of Corpozulia and Corpoturismo in the Maracaibo area.

Margarita

The Island of Margarita is more important now as a domestic tourist attraction than it is for international travel. The chief reason for its national popularity is its free zone. This enables Venezuelan travellers to buy up to \$350 in consumer goods per trip at much more favorable prices than in Caracas. Thus, Margarita has become an important shopping place for Venezuelans—so important that it has virtually replaced the islands of Aruba and Curacao in this function.

Margarita has more than 2,000 rooms, located in hotels, pensions, residential apartments, and other accommodations. It is estimated there will be 9,100 rooms of international class in Margarita by 1979 if all projects presently being discussed are completed. Around 2 million tourists a year would be needed to maintain an 80% occupancy rate with this number of rooms, according to estimates of the Venezuelan Association of Tourist and Travel Agents.

Presently-planned projects include the Hotel Centinela in Porlamar with 430 rooms at a cost of \$21 million. The tourist residence Laguna Blanca is to have 1,171 rooms at a cost of \$47 million. Hotel Margarita will cost \$29.5 million and have 500 rooms. The Centro Turistico will include a 360-room hotel, 21-room motel, and 45 cabanas at a cost of \$8.5 million. The Almacenadora Caracas, a 150,000 square-meter shopping center, is already started.

The President of Corpoturismo has noted that nearly all of the projects now being planned in Margarita are in the luxury class, and therefore unavailable to 95% of Venezuelans. Local tourist industry officials consider this estimate somewhat high. The President of the Chamber of Importers of Margarita estimated that room rates are \$35-\$50 a night. The Government recently authorized increases in room rates by 12-20%. Nationwide, the average room rate is about \$26. This compares very favorably with the \$50-a-night average of other Caribbean hotels. Nonetheless, they are out of range of most Venezuelans.

Since Venezuela has promoted import substitutions as a means of industrial development, virtually all of the furnishings and equipment for hotels are produced in the country and protected by high tariffs. This includes all textiles, furniture, lighting fixtures, and elevators. The manager of the Hotel del Lago reported that he was able to import only central air conditioning units and ice-making machines because of protective tariffs. Equipment for swimming pools, kitchens, laundries, and fire safety equipment also have relatively low import duties.

VENEZUELAN TOURISM ABROAD

In 1974, some 228,000 Venezuelans went abroad, a 54% increase over the 148,000 travelers in 1970. Corpoturismo estimated that Venezuelans spent some \$301 million abroad in 1975, excluding transportation. This figure is expected to rise to \$602 million in 1980.

During the first 10 months of 1974, 75,589 Venezuelans arrived in the United States. Estimates for a full year indicate that approximately 39% of all of Venezuela's foreign travel in 1974 was to the United States. It is estimated Venezuelans spent \$117 million in 1975 in the United States and will spend around \$234 million in 1980.

The purpose of travel for Venezuelans arriving in the United States during the first 10 months of 1974 was as follows:

Pleasure	88%
Students	5%
Business	5%
Transient passage	1%

According to one of the largest travel agencies in Venezuela, the most popular places to visit are Miami, Disneyworld, and New York City. New York was gaining in popularity over Miami and Florida before Disneyworld opened, but it has become relatively less important since. Stories of crime

and violence in New York have reinforced this trend.

Sophisticated Venezuelan tourists have traditionally traveled alone or in family groups, avoiding tours. The normal family group is from four to seven persons. The use of tours is increasing, however, since with increased income available, many more families are planning international travel. These new travelers often decide the best way to be sure of having convenient hotel reservations and a relatively trouble-free trip is by traveling with a tour.

The favorite vacation period in Venezuela is during the school year break in June, July and August, particularly the latter 2 months. According to a large travel agency, however, there is some discussion of changing the school vacation months to January and February beginning with the end of 1976. Should this occur, Venezuelan visitors would be trying to go to Florida at the height of the tourist season there. In any case, there appears to be great potential for spurring additional tourism from Venezuela through promotion campaigns emphasizing tourist attractions in other parts of the U.S. States such as Texas and Louisiana may have a particular advantage since so many of the Americans who have worked in the oil industry in Venezuela, particularly the Maracaibo area, were from those areas. They have left an apparently large reservoir of good will and interest in cities such as New Orleans and Houston.

Due to the high and increasing income levels in Venezuela, the relative sensitivity to price is much less than in other countries. According to Pan Am, Venezuela is the only country they serve where first-class seats sell out before economy-class. An executive in one of the largest travel agencies observes that there are numerous travel agencies in Venezuela, but they are primarily ticket offices which do not have extensive offerings of tour packages and other types of arrangements. Thus, the market for well-promoted tourism services appears to offer considerable untapped potential. The U.S. Embassy in Caracas has formed a Visit USA Committee consisting of international carriers, travel agents, and other parties. This group is tentatively planning to contract for an in-depth study of the tourism potential in Venezuela. The committee is also working on other projects to stimulate awareness of and interest in the United States as a place to visit, including several familiarization tours for travel agents and journalists. These tours would be designed to introduce Venezuelans to nontraditional vacation spots (for them) such as California and New England.

U.S. Government Services Available to American Exporters

MARKETING ASSISTANCE AND INFORMATION SERVICES

Foreign Promotional Events

The Department of Commerce sponsors a variety of promotional events designed to assist American firms and their representatives in developing export markets. Organized and staged by the Office of International Marketing (OIM), the events described below are utilized by U.S. exporters to penetrate the Venezuelan and other markets, increase sales, and find agents and distributors for their products.

Commercial Fairs.—Commerce-sponsored exhibitions of U.S. products of high sales potential, usually of a major single industry, staged in important international trade fairs.

Solo Exhibitions.—Export promotions planned, mounted and managed by the U.S. Department of Commerce in markets that offer promising export sales opportunities but which do not afford regularly scheduled fairs for the display of U.S. products to be promoted.

Specialized U.S. Trade Missions.—U.S. Department of Commerce organizes and sponsors Trade Missions covering selected product themes based on available market research and Foreign Service recommendations; Commerce establishes the overseas itinerary, pays the Mission's operating expenses, and provides an Advance Officer and a Mission Director.

Technical Sales Seminars.—These events, aimed at high technology markets, combine practical panel discussions by U.S. technology experts with individual private appointments. Additionally, these teams of U.S. industrial representatives on multi-country itineraries receive U.S. Foreign Service briefings, tour local installations, and conduct sales interviews, according to each represented company's marketing objectives.

Catalog Exhibitions.—Special displays of company catalogs, usually of a single industry, to test

markets, develop sales leads, and locate agents and distributors.

In addition to the above promotional techniques, the Department of Commerce also utilizes the following types to assist U.S. firms in promoting export sales:

U.S. Trade Center Exhibits.—U.S. manufacturers of specific products with prime market prospects and identified end users are drawn together at U.S. trade promotion facilities abroad, backed up by intensive promotion campaigns to attract the right buying audience.

Between-show Promotions.—Single U.S. company product or service promotions in U.S. Trade Centers, sponsored, organized and conducted by the companies themselves or their representatives abroad.

Joint Export Establishment Promotions (JEEPS).—Tailor-made promotions designed to help small groups of U.S. manufacturers of related products to inexpensively penetrate new markets on a shared-cost basis.

U.S. Trade Promotion Facilities Abroad

U.S. trade promotion facilities abroad provide U.S. manufacturers with a unique method of testing and selling in key foreign markets through commercial show rooms established in central marketing areas where the potential for American products is continuous.

There are U.S. trade promotion facilities in the following cities: In Europe, Frankfurt, London, Milan, Moscow, Paris, Stockholm, Vienna, and Warsaw; in Asia, Beirut, Osaka, Seoul, Singapore, Taipei, Tehran, and Tokyo; in Sydney, Australia, and in Mexico City.

Information on exhibitions at U.S. trade promotion facilities abroad may be obtained from the Country Marketing Managers or the Commerce district offices listed on the inside back cover of this Survey.

Country Consultants

Country Marketing Managers (CMM's) provide U.S. firms with marketing information by specific country, counseling on the preparation of effective marketing plans, aids in selecting best opportunity markets and assistance in participating in Commerce trade promotion activities. The CMM also can assist in obtaining other foreign business information available within the U.S. Government.

Popular among American businessmen seeking up-to-date marketing information are these publications available through Country Marketing Managers:

- *Overseas Business Reports* cover marketing and "doing business" information, economic data, and trade statistics in specific countries. Approximately 70 reports are issued annually.
- *Commerce America*, Commerce's bi weekly magazine, contain reports on economic trends, trade developments, and Commerce-sponsored trade events.
- *Global Market Surveys* condense the findings of field reserch conducted in 20-25 of the best country markets. Global Market Surveys have either been published or are scheduled to be published through 1977 on the following themes:

Agricultural Machinery and Equipment (1973)
Micrographics Equipment and Supplies (1973)
Biomedical Equipment (1973)
Computers and Related Equipment (1973)
Materials Handling Equipment (1974)
Electronics Industry Production and Test Equipment (1974)
Printing and Graphic Arts Equipment (1974)
Electronic Components (1974)
Metalworking and Finishing Equipment (1975)
Avionics and Aviation Support Equipment (1975)
Process Control Instrumentation (1975)
Food Processing and Packaging Equipment (1975)
Air and Water Purification and Pollution Control Equipment (1976)
Laboratory Instruments (1976)
Business Equipment and Systems (1976)
Electric Energy Systems (1976)
Communications Equipment and Systems (1976)
Building Materials and Construction Equipment (1976)
Computers and Peripheral Equipment (1977)
Medical Equipment (1977)
Printing and Graphic Arts Equipment (1977)
Equipment and Components for the Electronics Industry (1977)
Metalworking and Finishing Equipment (1977)

- *Country Market Surveys* are separate printed releases of the individual country reports included in Global Market Surveys.
- *Country Sectoral Surveys* illuminate the factors creating sales opportunities in market sectors in subject countries. They discuss growth by industry sector and the demand for U.S. capital goods over the next 5 years. The first two sectoral reports, *Brazil: Survey of U.S. Export Opportunities*, and *Nigeria: Survey of U.S. Export Opportunities* are now available, and a report on Indonesia is in preparation and scheduled for release soon after this
- *Survey Special reports* are prepared on timely opportunities and developments. Typical of these are: *Impact of Currency Realignment on U.S. Exports to Germany* (1973), *The Market for selected U.S. Capital Goods in Ecuador and Peru* (1975), *The Australian Market for U.S. Consumer Goods* (1975); and *A Report on the International Markets for U.S. Consumer Goods* (1976).

In addition, Country Marketing Managers receive an enormous quantity of information, both published and unpublished, on their countries. This data comes from private and public sources, American and foreign. It includes periodic reports received from the commercial sections of U.S. Embassies on selected industries or product categories, "best prospects" for sales in the coming year, and new developments and opportunities of special interest to the U.S. business community.

The Country Marketing Manager provides guidance and direction in commercial activities to the U.S. Foreign Service—Department of State, Trade Center Staffs, Commercial Fairs staffs, and other trade promotion personnel. This includes the planning and implementation of trade promotional activities listed earlier ("Foreign Promotional Events") within the respective country or countries. The CMM is the focal point in Commerce for the development and implementation of the annual Country Commercial Program, jointly prepared by Commerce and the Foreign Service. This operational planning document establishes objectives and priorities for U.S. Government trade promotion and support of U.S. business by country, and the actions to be undertaken to achieve them.

For further information and assistance on marketing in Venezuela, please call or write:

Country Marketing Manager—Venezuela
U.S. Department of Commerce
Washington, D.C. 20230
Telephone: (202) 377-4546

CMMs for other areas are listed on the inside back cover.

Export Information Services

The export information services described below can be obtained by contacting the U.S. Department of Commerce, Office of Export Development, Export Information Division, Room 1033, Washington, D.C. 20230, or the nearest of the Department's 43 district offices (listed following this section). Recently modernized data handling and retrieval techniques now make many services available in a fraction of the time previously necessary.

Trade Lists.—Names and addresses of foreign distributors, agents, purchasers, and other firms are made available to U.S. firms through a series of trade lists. *Target Market Trade Lists* are published by country on each *Global Market Survey* theme. *Business Firms Trade Lists* cover all commercial establishments in small developing countries. *State Trading Organizations Trade Lists* name and describe government-controlled foreign trade organizations in non-market economy countries.

World Traders Data Reports.—World Traders Data Reports (WTDRs) provide descriptive background information on specific foreign firms. Prepared by the U.S. Foreign Service, the WTDR's include such information as year of establishment, method of operation, lines handled, size of sales territory, name of chief executive, general reputation in trade and financial circles, names and addresses of credit sources, names of the firm's connections, and other commercial information. The complete name, street and city address of the foreign firm must be given when requesting this service. Nominal fee.

Agent/Distributor Service.—The Commerce Department's Agent/Distributor Service helps U.S. firms find agents or distributors for their products in almost every country of the world. U.S. Foreign Service Officers overseas will identify up to three foreign firms that express interest in a specific U.S. proposal. The charge for this service is \$25.

Application forms (DIB-424P) may be obtained from any Commerce Department district office.

Export Mailing List Service.—The Export Mailing List Service (EMLS) provides lists of foreign firms considered prospective customers for U.S. firms. Firms are drawn from the automated Foreign Traders Index. Their names and addresses are available on gummed mailing labels or in standard print-out form. Printouts also include: Name and title of an officer, type of organization, year of establishment, relative size, number of employees and salespersons, and product and/or service codes (Standard Industrial Classification numbers).

A nominal "set-up" charge also covers the first 300 entries retrieved. Beyond 300, a small additional cost per name is charged. Delivery can be made in about 15 days.

Foreign Traders Index (FTI) Data Tape Service.—

This service is offered as a convenience to firms that have a continuing need for a broad range of foreign commercial data, such as export management firms selling a wide range of products. This service provides, in magnetic tape form, information on all firms in one or more countries covered in the Foreign Traders Index. Users may thus retrieve various segments of FTI data by running tapes through their own computer facilities. There is a flat fee for this service on a per-country basis for up to 15 countries. A single, fixed charge is made for a package of 15 or more countries or for the entire file.

Overseas Business Opportunities

The overseas business opportunities services described below can be obtained by contacting the U.S. Department of Commerce, Office of Export Development, Overseas Business Opportunities Division, Room 2323, Washington, D.C. or the nearest of the Department's 43 district offices.

TOP.—The Trade Opportunities Program (TOP) receives up-to-date trade leads from over U.S. Foreign Service posts around the world daily and disseminates them to U.S. suppliers. Trade opportunities are based on inquiries by overseas companies that wish to purchase American products or services, or who are interested in representing U.S. firms. Trade opportunities may come from foreign governments, or even from multinational organizations such as NATO or the UN.

To register for TOP, U.S. firms are requested to specify their product and country interests and the types of commercial information desired—direct sales, representation, and/or foreign government tenders. As leads are developed by the Foreign Service, they are cabled to Washington, where they are matched by computer against the criteria established by U.S. companies. These leads are then mailed to appropriate U.S. firms within a week of their origination overseas. Trade leads are charged against prepaid subscriptions.

Overseas Product Sales Group.—The Overseas Product Sales Group (OPS) provides personalized assistance to TOP subscribers, or to firms identified as having high export capability, in bidding against foreign competitors for specific export sales opportunities with a value of \$1 million or more. The OPS specialists collect, inventory and disseminate early information on export sales opportunities from TOP and a variety of other sources.

Foreign Investment Services Staff.—The Foreign Investment Services Staff (FISS) is the focal point for American and foreign business inquiries relating to U.S. investment and licensing abroad. American

businessmen are assisted in locating potential overseas licensees and partners, are provided with investment data on specific regions and countries, and then guided toward sources of capital for these proposed projects. Foreign investment and licensing proposals for which U.S. participation and technology is sought are published regularly in *Commerce America* and are brought to the direct attention of American firms where appropriate. In carrying out its broad range of activities, FISS works closely with other U.S. Government assistance sources, multinational agencies and private regional investment organizations.

Office of Export Administration

Information on U.S. export control may be obtained from the U.S. Department of Commerce, Bureau of East-West Trade, Office of Export Administration, Washington, D.C. 20230. Telephone: (202) 967-4811.

EXPORT CREDIT INSURANCE

The Foreign Credit Insurance Association (FCIA) is an association of 53 stock and mutual insurance companies in partnership with the Export-Import Bank of the United States. It offers a comprehensive selection of credit insurance policies which protect policy holders against loss from failure to receive payment from foreign buyers.

The benefits of this coverage may be summed up as follows:

- It protects the exporter against the failure of the buyer to pay his dollar obligation for commercial or political reasons.
- It enables the exporter to offer foreign buyers competitive terms of payment.
- It supports the exporter's prudent penetration of higher risk foreign markets.
- It gives the exporter greater financial liquidity and flexibility in administering his foreign receivables portfolio.

Who May Be Insured

Virtually any corporation, partnership or individual doing business in the United States is eligible for FCIA coverage. An exporter may apply for a policy for himself or may become insured under the blanket policy of a bank or other financial institution which holds an FCIA policy.

Eligible Products

Foreign sales of all types of industrial agricultural, and commercial products produced in the United States and of services rendered by U.S.-based personnel are eligible for FCIA insurance.

What Losses are Covered

Comprehensive FCIA policies protect insureds against non-payment of receivables due to unforeseeable commercial and political occurrences. Commercial risks which are covered include insolvency of the buyer or protracted defaults which may well arise from economic deterioration in the buyer's market area, shifts in demands, unanticipated competition, tariffs, or technological changes. Also covered are defaults due to such buyer problems as increasing expenses, the loss of key personnel, and natural disasters.

Political risks coverage applies to defaults due to governmental action and to political disturbances such as war, revolution, and insurrection. Such events may result in confiscation of the buyer's assets, detention or diversion of shipments, or cancellation of necessary licenses by the United States or by the buyer's country. Also covered is the inability or refusal of the foreign central bank involved to convert the buyer's currency to dollars. Political coverage alone is available for exporters who desire to assume their own commercial risks.

The Policies

The policies offered by FCIA are many and varied. They can be tailored to suit the needs of the individual exporters, service groups, and financial institutions. Aside from a small applicant fee, all premiums are paid only for goods actually shipped.

The Master Policy combines a deductible provision, discretionary credit authority, and once-a-year reporting to provide qualified exporters with lower premiums, independent credit decisions, faster services to overseas buyers, and less paperwork. It is a blanket policy which requires the exporter to insure all or a reasonable spread of his exportation.

The Short-Term Policy is a blanket policy which covers sales on terms of up to 180 days. It provides coverage of 90% for commercial losses and 95% for political losses. A moderate discretionary credit limit is included for each buyer.

The Medium-Term Policy provides 90% coverage (political and commercial) for capital and quasicapital goods sold on terms of 181 days to 5 years. The policy is written on a case-by-case basis so an exporter need not insure all his medium-term transactions as he would under a blanket policy.

The Combination Policy provides short- and medium-term insurance to protect U.S. exporters in transactions with overseas dealers and distributors. It includes flexible coverage for short-term sales and for both inventory and receivable financing.

The Comprehensive Services Policy insures the receivables generated by the performance of serv-

ices for foreign customers by U.S.-based personnel, or by U.S. personnel temporarily assigned overseas. Industries benefiting from this coverage include management consultants, engineering and related construction consulting services, and transportation companies.

Special Coverage Endorsements are available in addition to the above policies. These include endorsements to cover specified preshipment risks and consignment selling.

An Aid to Financing

FCIA does not finance export sales. However, the exporter who insures his accounts receivable against commercial and political risks is usually able to obtain financing from commercial banks and other lending institutions at lower rates and on more liberal terms than would otherwise be possible.

Prequalification of Buyers

FCIA's rapidly expanding prequalifying (P.Q.) program is now providing credit information on overseas buyers through its computerization data system. All the exporter needs to do is telephone the nearest FCIA office to determine whether a particular buyer is prequalified for the amount of his purchase.

Information about FCIA

More information about FCIA's services, and applications for policies, may be obtained through insurance agents or brokers or through FCIA's network or full-service regional offices. General questions and specific inquiries may be directed toward the FCIA Ombudsman in the New York office. Call (212) 432-6216 for a direct connection.

FCIA Offices

One World Trade Center—9th Floor
New York, New York 10048
Phone: (212) 432-6200

1250 South OmniInternational
Atlanta, Georgia 30303

Suite 1552
10 South Riverside Plaza
Chicago, Illinois 60606

Suite 1300
55 Public Square
Cleveland, Ohio 44113

Suite 1790
611 West Sixth Street
Los Angeles, California 90017

Suite 1110—First Federal Bldg.
700 North Water Street
Milwaukee, Wisconsin 53202

C&I Building—Suite 1408
1006 Main Street
Houston, Texas 77002

Suite 205
1 Embarcadero Center
San Francisco, California 94111

Woodward Building, Suite 420
15th & H Streets, N.W.
Washington, D.C. 20005

FINANCING EXPORT SALES

The Export-Import Bank of the United States (Eximbank) is an independent agency of the U.S. Government which works directly with American suppliers and private financial institutions to finance U.S. export sales. Eximbank has numerous financing programs to assist U.S. firms. These include direct loans, bank guarantees, discount loans to commercial banks, leasing guarantees, and other programs to cover overseas design and engineering studies.

Financing packages for major industrial projects and exports of high value products are normally supported under Participation Financing, a combination of the Direct Loan and Financial Guarantee programs.

Direct Loans are dollar credits extended by Eximbank to borrowers outside the United States for purchases of U.S. goods and services. Disbursements under the loan agreement are made in the United States to the suppliers of the goods and services, and the loans, plus interest, are repaid in dollars by the borrowers.

Eximbank will extend its Financial Guarantee to cover loans made by U.S. financial institutions to foreign government or private purchasers of U.S. goods and services. The Financial Guarantee will unconditionally guarantee repayment by a borrower of up to 100% of the outstanding principal due on such loans plus interest equal to the U.S. Treasury rate for similar maturities, plus 1% per annum on the outstanding balances of the loan. Comparable guarantees are available to non-U.S. financial institutions under somewhat different terms.

Of particular importance to U.S. businessmen is Eximbank's Cooperative Financing Facility program which supports medium-term financing in all major markets. Eligible overseas banks are extended a line of credit for half of the funds needed for each transaction, presently at 8% interest, and the cooperating banks provide the other half at local market rates. These banks make credit judgments

regarding the customer and can consummate transactions with a minimum of difficulty. Eximbank currently has established approximately 300 such working arrangements with foreign financial institutions (private and public) in over 100 countries.

Eximbank's Commercial Bank Exporter Guarantee program, another activity of special interest to exporters, provides guarantees covering the credit and political risks of non-payment of medium-term (181 days to 5 years) export debt obligations purchased by U.S. banking institutions on a non-recourse basis from the exporters. The fee charged for Eximbank's guarantee depends upon (1) the classification accorded the country of import, (2) the length of the repayment terms, and (3) the financial condition of the overseas buyer.

As a general rule, all transactions supported by Eximbank must include a minimum 10% cash payment by the buyer and must have reasonable assurance of repayment.

The Bank is directed by statute to supplement and encourage private capital, not compete with it. Selected product lines and services to designated markets are excluded from the agency's support; however, the overwhelming majority of U.S. export products and markets are covered. Details on the exceptions are available from U.S. commercial banks or directly from Eximbank.

Businessmen are specifically invited to utilize Eximbank's counseling services for exporters, banks and financing institutions seeking financing for U.S. exports. The services include information on the availability of financing within the United States and abroad, as well as on each of the pertinent Eximbank programs.

For additional information, contact the Export-Import Bank of the United States, 811 Vermont Avenue, N.W., Washington, D.C. 20571, or Telex 89-461

OVERSEAS INVESTMENT INSURANCE AND FINANCE

In keeping with the objectives set forth by Congress, the Overseas Private Investment Corporation (OPIC) is fostering economic progress and development through private enterprise in some 80 friendly lesser developed countries in Africa, Latin America, Asia, and Eastern Europe. It does this by providing qualified U.S. investors—large and small—with political risks insurance and financial assistance to support their investments in these countries.

OPIC insurance and financing are extended to new projects or the expansion of existing projects which are financially sound. All projects OPIC supports must assist in the social and economic development of the host country, and must be consistent with the economic interests of the United States.

Insurance Services

OPIC's insurance program provides coverage, in the areas indicated above, against:

- Inconvertibility of local currency earnings
- Expropriation
- War, revolution and insurrection

To the private investor interested in establishing operations in the developing nations, political risk insurance is often an essential element in the decision to make a commitment overseas because, although he has the capability to assess the practical business considerations involved, he may find it difficult to judge the country's long-range political climate. OPIC's typical insurance coverage is available for up to 20 years at a combined annual premium of 1.5% for all three coverages. Today, nearly two-thirds of U.S. (non-petroleum) private investment in the less developed countries is insured by OPIC.

Finance Services

The major objective of the finance program is to assist U.S. lenders and business enterprises in searching out and financing worthwhile private sector projects in the developing world. The three principal means for accomplishing this are OPIC's investment guaranties, its direct loans, and its pre-investment assistance program.

The investment guaranty program protects U.S. leaders against loss from commercial and political risks by providing for repayment of principal and interest on loans made to projects in which a U.S. company has a major financial and managerial commitment. The direct investment fund offers long-term direct dollar loans at commercial interest rates to viable projects involved in manufacturing, processing, services, and agribusiness. Guaranties are available for mining and other natural resource projects. The pre-investment survey program is designed to assist investors on a risk-sharing basis in finding viable projects in the developing nations.





Commerce Department District Offices

Albuquerque, N.M., (505) 766-2386.
Anchorage, Alaska, (907) 265-5307.
Atlanta, Ga., (404) 526-6000.
Baltimore, Md., (301) 962-3560.
Birmingham, Ala., (205) 254-1331.
Boston, Mass., (617) 223-2312.
Buffalo, N.Y., (716) 842-3208.
Charleston, W.Va., (304) 343-6181, Ext. 375.
Cheyenne, Wyo., (307) 778-2151.
Chicago, Ill., (312) 353-4450.
Cincinnati, Ohio, (513) 684-2944.
Cleveland, Ohio, (216) 522-4750.
Columbia, S.C., (803) 765-5345.
Dallas, Tex., (214) 749-1515.
Denver, Col., (303) 837-3246.
Des Moines, Iowa, (515) 284-4222.
Detroit, Mich., (313) 226-3650.
Greensboro, N.C., (919) 275-9111, Ext. 345.
Hartford, Conn., (203) 244-3520.
Honolulu, Hawaii, (808) 546-8694.
Houston, Tex., (713) 226-4231.
Indianapolis, Ind., (317) 269-6214.
Los Angeles, Calif., (213) 824-7591.
Memphis, Tenn., (901) 534-3213.
Miami, Fla., (305) 350-5267.
Milwaukee, Wis., (414) 224-3473.
Minneapolis, Minn., (612) 725-2133.
New Orleans, La., (504) 589-6546.
New York, N.Y., (212) 264-0634.
Newark, N.J., (201) 645-6214.
Omaha, Neb., (402) 221-3665.
Philadelphia, Pa., (215) 597-2850.
Phoenix, Ariz., (602) 261-3285.
Pittsburgh, Pa., (412) 644-2850.
Portland, Ore., (503) 221-3001.
Reno, Nev., (702) 784-5203.
Richmond, Va., (804) 782-2246.
St. Louis, Mo., (314) 425-3302.
Salt Lake City, Utah, (801) 524-5116.
San Francisco, Calif., (415) 556-5860.
San Juan, P.R., (809) 723-4640.
Savannah, Ga., (912) 232-4204.
Seattle, Wash., (206) 442-5615.

Country Marketing Managers Series

Commercial and economic information on most trading partners of the United States is available from the Bureau of International Commerce, U.S. Department of Commerce.

The Bureau is organized geographically with a Country Marketing Manager responsible for a country or group of countries as listed below. Assistance or information about marketing in these countries may be obtained by dialing these key people directly. **202-377** plus the given extension.

Africa 4927

Europe

France and Benelux Countries	4504
Germany and Austria	5228
Italy, Greece and Turkey	3944
Nordic Countries	3848
Spain, Portugal, Switzerland and Yugoslavia	2795
United Kingdom and Canada	4421

Far East

Australia and New Zealand	2648
East Asia and Pacific	5401
Japan	2425
Southeast Asia	2522

Latin America

Brazil, Argentina, Paraguay and Uruguay	5427
Mexico, Central America and Panama	2314
Andean Common Market and Caribbean Countries	2995

Special units within the Department of Commerce have been created to deal with particular marketing situations:

Commerce Action Group for the Near East

North Africa 5737

Near East

Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Peoples Democratic Republic of Yemen, Qatar, Saudi Arabia, Syria, United Arab Emirates, Yemen Arab Republic	5767
Iran, Israel, Egypt	3752

Bureau of East West Trade

Eastern Europe	2645
USSR	4655
Peoples Republic of China	3583

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